Three Essays on Corporate Finance: Dual Class Share Structure, Parmalat Fraud, and Earnings Management and Compensation

DISSERTATION

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and Information Technology of the University of Zurich
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presented by

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The Faculty of Economics, Business Administration and Information Technology of the University of Zurich hereby authorizes the printing of this Doctoral Thesis, without thereby giving any opinion on the views contained therein.

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Does Dual Class Share Structure Impact Performance or does it Exclusively Impact Perception?

Do Firm Market Valuations Reflect Managerial Honesty?

Part I: Introduction

Summary of Research Papers

My PhD thesis is articulated around three research papers focused on corporate governance from a corporate finance perspective. All the topics are relevant for decision makers and deal with questions that relate with recent events. The first paper, written together with Professor Michel Habib, focuses on the consequences deriving from the deviation from one share-one vote structure related to non-voting share. This topic has been especially debated due to the recent decision of many IT companies to introduce this dual share structure. The second paper delves deeply into the intricacies of Parmalat bankruptcy. The aim of the paper is to clarify also from a technical point of view how the fraud was realized. The likelihood of "a new Parmalat" is in my opinion very high due to the persistent weakness of western economies. It is, therefore, important for markets (and analysts in particular) to understand in detail the past to avoid the same mistakes in the future. Finally, the last paper, a joint work with Prof. Rajna Gibson and Prof. Alexander Wagner, addresses the question of the relation between managerial honesty and firm market valuation. This is a hotly discussed topic, especially after the dubious ethical behaviors that the financial crisis helped unveiling.

Concerning the first paper, it analyses the effect of dual share structure on performance using a sample of all quoted firms in Italy, where deviations from one share one vote share structure is more common and the legal framework is very favourable for this kind of analysis because multiple voting shares are forbidden. This framework makes the difference between voting and non-voting shares crispier. Our findings are consistent with the fact that companies that chose not to have dual share structure or that had it and decided to unify their shares would suffer respectively from choosing it or reinstitute it. On the contrary, for a few respected and well established firms the negative price pressure related with the use of dual share structure does not take place probably due to their reputation. In this case, an eventual unification would probably be damaging in terms of price. These results are consistent with the fact that the dual share structure impacts the share price mostly through the negative perceptions related to this share structure.

The second paper focuses on the bankruptcy of Parmalat. The fraud was one of the biggest in Europe and generated a hole of billions of euros. The paper is aimed at explaining what mechanisms were set up in order to make this fraud possible, keeping an eye on the role of the different stakeholders (banks, auditors, institutional investors etc.). Thanks to some accounting tricks, which are described in detail, and political ties, the founder of the firm was able to get substantial amounts of financing and to generate a hole in the billions. In order to provide a bigger picture on the causes of the fraud, I also tried to put Parmalat's case in the greater framework of Italian capitalism and to underline the damages produced in this story by "relational capitalism". The role of investment banks and accounting firms is also described. Finally, I present a short summary of the main lessons that financial analysts should learn from Parmalat, focusing especially on the alarm bells that should be considered to identify fraud in advance.

The last paper relates to managerial honesty, which we are able to capture through the joint use of a measure of discretionary accruals (i.e. earnings management) and of an incentive ratio, which capture the CEO wealth variation from a 1% change in share price. In particular we developed a Carhart-Fama-French four factor model to assess the variation in cost of capital between the portfolios containing firms managed by honest CEOs and those in which we sorted all the firms managed by dishonest CEOs. The results show that firms with high earnings management but low CEO incentives to engage in earnings management exhibit high risk-adjusted excess returns (alphas), whereas firms with low earnings management despite high CEO incentives exhibit low alphas. The spread portfolio yields a highly significant difference. One interpretation of the evidence is that the market rewards firms whose CEOs are committed to telling the truth (avoiding earnings management) even when it is personally costly. After the Sarbanes-Oxley Act was put in place, these differences decrease substantially, suggesting that investors perceive this regulation as a substitute to market discipline.

I would like to thank Prof. Michel Habib for having dedicated me all the time I needed to learn, for being always available for questions, even if not strictly related to our research. In particular, I am greatly thankful to him for the deep understanding of corporate finance mechanics that he helped me to reach. This was in the end the main aim of my research period at the University of Zurich.

I am greatly indebted to my girlfriend, Tiziana, my mother, Elena, and my father, Rodolfo, for their constant support and their endurance and patience in bearing my bad mood when the research did not proceed the way I expected. This thesis is surely dedicated to them.

Ad meliora,

Lorenzo Brandi

Zurich, July 2013

Part II: Research Papers

Does Dual Class Share Structure Impact Performance or does it Exclusively Impact Perception?

Lorenzo Brandi * and Michel Habib **

July 23, 2013

Abstract

The issuance of non-voting shares has been a hotly discussed topic. Our paper aims at contributing on the issue analysing the effect of such a share structure on performance using a sample of all quoted firms in Italy, where deviations from one share one vote share structure is more common and the legal framework is very favourable for this kind of analysis because multiple voting shares are forbidden. This framework makes the difference between voting and non-voting shares crispier. Our findings are consistent with the fact that companies that chose not to have dual share structure or that had it and decided to unify their shares would suffer respectively from choosing it or reinstitute it. In contrast, for a few respected and well established firms the negative price pressure related with the use of dual share structure does not take place probably due to their reputation. In this case, an eventual unification would probably be damaging in terms of price. These results are consistent with the fact that the dual share structure impacts the share price mostly through the negative perceptions related to this share structure.

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Keywords: Dual class share structure, Share unification.

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1. Introduction

In 2004 during its IPO Google offered the possibility of buying class A shares, which allow for one vote per share, while the two founders obtained B class shares, which allow for ten votes each share. This has given the two founders absolute control of the voting rights and the other shareholders have only had a residual possibility to influence the decision making process conditional on the two founders disagreement, which in reality does not seem a highly probable event, given the recent history of the company. Google opened the way and many internet companies followed its dual class share structure: LinkedIn, Facebook, Groupon, Zynga. On April 12th 2010 Google's representatives announced a strong increase in earnings and at the same time a "stock split". The terminology is rather misleading: the operation consisted in distributing to the actual shareholders (of A and B shares) a dividend in the form of C shares, in proportion one to one. The new shares have no voting rights. The company is, therefore, preserving the possibility to make acquisitions and to grant stocks to employees without diluting Mr. Page's and Mr. Brin's (i.e. the founders) voting rights[1]. Given Google's capability to open the path for all quoted internet companies, it is really interesting to analyse more in detail the decision to issue a non-voting class of stocks.

The topic of disproportional ownership[2] has been one of the most debated and difficult to address in the corporate finance literature. The main problem is that we do not have a natural experiment: as correctly pointed out by Adams and Ferreira (2007), "ownership structures are not randomly distributed across firms". Therefore it is very easy to fall in the trap of misspecification that invalidates any casual interpretation. In a regression of performance on ownership structure, such as ours, many issues related to endogeneity could arise: reverse causality (performance influences the decision to have a certain ownership structure), self selection (firms self select into the most convenient ownership structure) and omitted variables bias. Statistically, this could imply that one of the independent variables is correlated with the error term. The difficulties are not over: most of the ownership structures are not easy to capture and to turn into numbers and most of the problems related with this kind of analysis are difficult to measure (for an interesting discussion on the difficulties related to measuring private benefits analysis see Dyck and Zingales (2004)).

In the "world" of disproportional ownership our studies takes a more specific focus on dual share structure in Italy. The reason why we decide to restrict our sample to Italy is that it offers a perfect field for this analysis: as we will see more in detail in the third chapter, in Italy multiple voting shares

[1] The legal framework includes a stalping provision that does not allow the founders to sell C shares without selling also their B shares. This is meant to avoid agency problems that would arise if the two founders had big voting rights but limited patrimonial rights.

[2] Disproportional ownership is defined as the use of different mechanisms that allow the separation between voting rights from cash flow rights. In other words, the concept of disproportional ownership does not only include dual share structure but also cross ownership, pyramids etc. An interesting summary on this topic is provided by Adams and Ferreira (2007).

are forbidden by law. In addition, the almost unique[3] deviation from the one share-one vote scheme is the issuance of "saving shares", which do not allow for any voting right. Being aware that this analysis is pretty specific, we are convinced that with this approach we can have a clearer view of non-voting share mechanics without the interference of multiple voting rights. A firm can have three possible share structures: "one share one vote", multiple vote shares that do not assure against loss of control but make this event more difficult, non-voting shares that assure the controlling shareholders against loss of control. In Italy only the two most extreme solutions are possible. That is, the Italian setting makes the analysis crispier because no intermediate solution is possible: this means that the effects of the discrepancy between ownership (i.e. cash flow rights) and control (i.e. voting rights) should be more apparent. Google with its decision to switch from multiple voting shares to non-voting shares provides an example of the fact that these two share structures are not perfect substitutes. Indeed, the nonvoting shares are the surest way to retain control: even if the controlling shareholder holds multiple voting shares, she is eventually losing control if the company keeps issuing new shares. This does not happen if the company issues nonvoting shares. Given that dual share structure in Italy represents the most extreme case of wedging between ownership and control through a dual share structure, if we find no impact on performance (which is what we get for return on assets), we could conclude that this is also true for the intermediate stage of multiple voting shares. Furthermore, another reason to use the Italian dataset is that the use of dual share structure has been historically much more relevant in Italy than in US and UK markets, even if it is possible to notice a certain convergence in the last decade, as we will see in the descriptive statistics.

If the topic of dual class share structure has generated outcries for "safeguarding democracy in US capitalism" in the press (see article Third-class shares, Financial Times, April 15th, 2012)[4], it is therefore interesting to find out if these pleas are justified. The vast majority of the literature supports a more democratic regime among shareholder, mostly due to the agency and entrenchment problems that a wedge between ownership and control could generate. The aim of our analysis is, therefore, to delve deeply into the decision to issue non-voting shares and to understand if the companies taking advantage of the dual share structure tend to underperform or outperform. Our paper is innovative in many regards. First, as clarified earlier, it uses an Italian sample instead of an US one because of the Italian legislative setting but also because it is perhaps more sensible to base the analysis in a continental European country where firms do not massively abide by the "one share, one vote" rule.

[3] The other possibility is the issuance of special shares but only three companies use them. We will address the point more in detail in chapter 3. However, even special shares follow either the one vote-one share or the one share-no vote scheme, given that multiple voting right shares are not allowed.

[4] An open debate took place in the EU institution about this point. Mr Doyle, an EU officer, is among the most assertive supporters of unification. Some years ago he said: "delivering shareholder democracy in the form of one-share-one vote is vital at this stage in the EU's thrust to encourage more cross-border investment by individual citizens and investment firms. At a time when most EU states are facing unfunded pension liabilities as the European population ages, it is crucial that we send the right message to prospective equity investors about the rights they would enjoy if they buy into this category of investment; faulty or discriminatory treatment of shareholders will not provide a compelling basis for building confidence in equity investments"

Secondly, the paper uses a not yet fully exploited methodology for this kind of analysis (a switching regression model with endogenous switching) delving deeply and describing the model (and its assumptions) in detail. It is often the case in the corporate finance literature that this methodology is used without describing all the aspects that the model implies. Of course the issues related to endogeneity that is crucial for an unbiased result in this kind of analysis are addressed mostly through a functional form, although we also consider an additional variable which acts as an instrument. Finally, our paper shows interesting new results that can complement the actual literature. We find evidence that those companies that do not have dual share structure would suffer if they introduced it. This may explain why they do not have it or have unified their shares. On the other hand, companies that have it do not seem to suffer from it and this might explain why they chose to retain this capital structure. In other words, companies that do not have it appear to be conscious of the fact that, if they were to have it, they would suffer and those having it are aware that they do not suffer due to their dual share structure. In contrast with the paper of Gompers, Ishii and Metrick (2010), we do not only consider Tobin's Q as a measure of performance but we believe that the analysis must be also complemented with an accounting measure (ROA). The main reservation is that Tobin's Q only relates to the market value of outside equity and does not capture the entire firm value.

The dual share structure can generate two effects: a negative one that relates to the exploitation of private benefits and a positive one that relates to the monitoring power of large controlling shareholders (Shleifer and Vishny (1986)). In other words, only if a shareholder has a lot of votes is her say taken into account. The vast majority of the literature focuses on the first effect and finds out that dual structure destroys value, as for example in Masulis, Wang and Xie (2009). It must be said that we believe that our results relates only to the dual share structure obtained through non-voting shares that is only one of the possible means to wedge between ownership and control (see Adams and Ferreira (2007) for an exhaustive list of such means). It is possible that other less transparent forms of disproportional ownership do generate entrenchment and agency problems. However, this does not seem the case for dual share structure, given our results. It could be the case that other forms of wedging between ownership and control, which are not putting the controlling shareholders under the spotlight, are selected when the insiders want to exploit private benefits. It is, anyway, incorrect to relate the expropriation of non-controlling shareholders with this capital structure. Investors are aware of potential issues related to this capital structure and should discount any eventual problem related to expropriation of private benefits in the price (some evidence of this discounting can be found in Claessens, Simeon, Fan and Lang (2002). In our opinion, the transparent characteristics of this share structure and the results of our analysis are two elements against an eventual unification of different kind of shares that would be imposed by law, as suggested by some European politicians.

The paper is organized as follows. In Section 2, we describe the switching regression model with endogenous switching that we use, analyzing in detail the specific assumptions of the model. In

Section 3 we focus on the variables description. Section 4 contains the empirical analysis. The chapter opens with some descriptive histograms that introduce the reader to the data and that support the results from the regression that follows. Then we analyze the results of our model focusing on two points: the likely motivation for the decision to retain dual share structure and the impact of this capital structure on the company performance. Section 5 concludes.

2. The Model

2.1 The Switching Regression Model with endogenous switching: the general framework

The aim of our model is to answer the underlying question of this paper: is dual share structure value enhancing? The difficulties related to a model able to address this question are mostly related to the endogeneity issues that arise when performance is regressed on dual dummy, given some covariates. A switching regression model with endogenous switching helps us to deal with this problem. In this chapter, we describe the general setting that will then help to understand the following chapter, where the specific model that we used is described in detail.

The need for a cross-sectional model is related to the difficulty to find data in our setting. In addition, there is also a strong attrition problem that surely would affect a panel dataset.

Ideally, we are interested in the difference between Y_{1i}, which is the performance in case the company i has dual structure, and Y_{0i}, which is the performance in case the very same company i would not have dual structure. Of course, there is no possibility to get both values at the same time on the same company but only one of the two is observable. In addition, we are not interested in individual differences but rather in population averages. For this reason we define the average treatment effect as:

$$ATE = E(Y_{1i} - Y_{0i})$$

On the other hand, the average treatment effect on the treated is a more relevant statistics in our setting because it analyzes the impact of the treatment (i.e. the decision to have dual structure) on the treated:

$$ATT = E(Y_{1i} - Y_{0i}|d = 1)$$

Where d is the treatment variable: it takes value one if the company has dual share structure (i.e. it is treated) and zero otherwise.

While these two measures are based on expectations, we observe one of the two realizations, Y_{1i} or Y_{0i} , for each company. Therefore, for those companies having dual structure, we could also calculate the total benefit:

$$TB = Y_{1i} - E(Y_{0i}|d = 1)$$

and for those without dual structure the total benefit for non-dual companies:

$$TBND = E(Y_{1i}|d = 0) - Y_{0i}$$

In a hypothetical randomized experiment we would have that $Y_{i,}$ and d are independent and therefore the ATE will be equal to the ATT. In this setting, in order to estimate the impact of dual structure on performance an OLS regression would suffice. On the other hand, assuming a conditional independence between $Y_{i,}$ and d given the covariates, X_i', is also enough to run an OLS regression:

$$Y = X'\beta + \delta d + \varepsilon$$

In this case the $ATT = \delta$, as showed in appendix 1. Further details can be found in Winkelmann and Boes (2006). Unfortunately the decision to establish dual structure is not randomly assigned but it is the result of a self-selecting company behavior. Our identification strategy relies on a functional form plus instruments to solve the endogeneity that inevitably affect our analysis. Our choice fell on a switching regression model with endogenous switching that follows the stages of Lee (1978) and strongly relates to Heckman's modeling of control functions (see Heckman (1979) and Heckman (1978)). Intuitively, in our model, we "adjust for" the correlation between the error and the dual dummy through the introduction of an inverse Mills ratio.

The model, in the general framework, consists of two equations, characterizing to the two possible regimes:

$$Y_{0i} = X_{0i}'\beta_0 + u_{0i} \text{ if d=0} \qquad (1.1)$$

$$Y_{1i} = X_{1i}'\beta_1 + u_{1i} \text{ if d=1} \qquad (1.2)$$

Where $u_{1i} \sim N(0, \sigma_1^2)$ and $u_{0i} \sim N(0, \sigma_0^2)$. The X_i represents some covariates, other than dual structure, that drive the performance of the firm.

d is endogenous; what determines if d=1 or 0 is likely correlated with the outcome. Therefore, it is likely correlated with the determinants of the outcome (i.e. the Xs). However, given that we could not measure all the possible Xs affecting our outcome, the endogeneity problem is reflected in the fact that the conditional expectation of the error term is non zero. That is:

$$E(Y_{0i}|X_i, d = 0) = X_{0i}'\beta_0 + E(u_{0i}|d = 0) \neq X_{0i}'\beta_0$$

$$E(Y_{1i}|X_i, d = 1) = X_{1i}'\beta_1 + E(u_{1i}|d = 1) \neq X_{1i}'\beta_1$$

This is due to the fact that:

$$E(u_{ji}|d = j) \neq 0 \qquad j = 0,1$$

We will see how to correct the conditional expectation of the error term in order to solve this problem. However, it is convenient to introduce at this point the "first stage" in the model: we define a selection

equation where we define the independent variables that generate the decision to have a dual share structure. We therefore define a latent unobserved variable through the following equation:

$$I_i^* = \delta_0 + \delta_1(Y_{1i} - Y_{0i}) + Z_i'\delta_2 + u_{di}$$

Where $u_{di} \sim N(0, \sigma_d^2)$

A company will select the dual structure if the benefits from this structure are bigger than zero, that is if $I_i^* > 0$. Of course a relevant component in this decision will be the difference in the Y-s, which aims at modeling the increase in performance that the dual structure generates. The Z_i' are the variables on which the decision to have dual structure are based such as the variables wliq (bid-ask spread) and vfloat (voting free float). The point is explained in detail in chapter 3.1.

If we explicit the Y-s:

$$I_i^* = \delta_0 + \delta_1(X_{1i}'\beta_1 + u_{1i} - X_{0i}'\beta_0 - u_{0i}) + Z_i'\delta_2 + u_{di} = \gamma_0 + W_i'\gamma_1 + \xi_i$$

Where $\xi_i \sim N(0,1)$

Where W_i is a vector containing all the variables in Z_i and X_i. In order to develop our model we need to assume that u_{1i}, u_{0i} and u_{di} have a trivariate normal distribution. This assures us that ξ_i, which is a linear combination of the three errors, is also normally distributed. In addition we normalize the variance of the error ξ_i,i.e. $\sigma_\xi^2 = 1$. This assumption is needed for identification purposes. In fact we do not have enough information to identify all the parameters. The covariance matrices between, respectively, ξ_i and u_{0i} and ξ_i and u_{0i} will take the form:

$$\Sigma_{\xi 0} = \begin{pmatrix} 1 & \lambda_{\xi 0} \\ \lambda_{\xi 0} & \sigma_0^2 \end{pmatrix} \text{ and } \Sigma_{\xi 1} = \begin{pmatrix} 1 & \lambda_{\xi 1} \\ \lambda_{\xi 1} & \sigma_1^2 \end{pmatrix}$$

Where $\lambda_{\xi 0} = Cov(\xi_i, u_{0i})$ and $\lambda_{\xi 1} = Cov(\xi_i, u_{1i})$

Regarding the estimation methodology, in the first stage, we use a probit regression in order to estimate $\gamma_0$and γ_1. The dependent variable will be a dummy variable that takes value 1 if the company has dual share structure, 0 otherwise. The estimate $\hat{\gamma}_0 + W_i'\hat{\gamma}_1$ will then be the required input in the second stage.

Given the assumptions on the distribution of the errors, the following equations hold:

$$E(Y_{1i}|X_i, d = 1) = X_{1i}'\beta_1 + E(u_{1i}|d = 1) = X_{1i}'\beta_1 + E\left(u_{1i}\middle|\xi_i > -(\gamma_0 + W_i'\gamma_1)\right)$$
$$= X_{1i}'\beta_1 + \lambda_{\xi 1}\frac{\phi(\gamma_0 + W_i'\gamma_1)}{\Phi(\gamma_0 + W_i'\gamma_1)} equation\ (1.3)$$

$$E(Y_{0i}|X_i, d=0) = X'_{0i}\beta_0 + E(u_{0i}|d=0) = X'_{0i}\beta_0 + E\left(u_{0i}\middle|\xi_i < -(\gamma_0 + W_i'\gamma_1)\right)$$
$$= X'_{0i}\beta_0 - \lambda_{\xi 0}\frac{\phi(\gamma_0 + W_i'\gamma_1)}{1 - \Phi(\gamma_0 + W_i'\gamma_1)} \; equation\ (1.4)$$

Where ϕ is a standard normal density function and Φ the corresponding distribution function. The proof of the two equations above is given in the appendix II.

Therefore now the two equations (1.1) and (1.2) become:

$$Y_{1i} = X'_{1i}\beta_1 + \lambda_{\xi 1}\frac{\phi(\gamma_0 + W_i'\gamma_1)}{\Phi(\gamma_0 + W_i'\gamma_1)} + \eta_{1i}$$

$$Y_{0i} = X'_{0i}\beta_0 - \lambda_{\xi 0}\frac{\phi(\gamma_0 + W_i'\gamma_1)}{1 - \Phi(\gamma_0 + W_i'\gamma_1)} + \eta_{0i}$$

The conditional expectations of the new error terms are now zero:

$$E(\eta_{ji}|d=j) = 0 \qquad j = 0,1$$

Therefore, we could now run an OLS regression that is likely to result in unbiased estimators. However, as pointed out by Maddala (1983), the residuals $\eta_{1i}$and η_{0i} are heteroscedastic and therefore it is advisable to estimate the two equations with the weighted least squares method.

Regarding the ATT, with the same methodology followed for the previous measures we can estimate the value of $E(Y_{0i}|X_i, d=1)$ after having estimated the lambdas. The derivation is given in Appendix II.

$$ATT_i = E(Y_{1i} - Y_{0i}|X_i, d=1) = X'_{1i}\beta_1 - X'_{0i}\beta_0 + (\lambda_{\xi 1} - \lambda_{\xi 0})\frac{\phi(\gamma_0 + W_i'\gamma_1)}{\Phi(\gamma_0 + W_i'\gamma_1)}$$

and

$$ATNT_i = E(Y_{1i} - Y_{0i}|X_i, d=0) = X'_{1i}\beta_1 - X'_{0i}\beta_0 + (\lambda_{\xi 1} - \lambda_{\xi 0})\frac{-\phi(\gamma_0 + W_i'\gamma_1)}{1 - \Phi(\gamma_0 + W_i'\gamma_1)}$$

If ATT and ATNT are measures based on averages, we can observe the performance in one of the two states (dual or non-dual). Therefore, in the following measures we use the realization that we have instead of the conditional expectation.

$$TB_i = Y_{1i} - E(Y_{0i}|X_i, d=1) = Y_{1i} - X'_{0i}\beta_0 - \lambda_{\xi 0}\frac{\phi(\gamma_0 + W_i'\gamma_1)}{\Phi(\gamma_0 + W_i'\gamma_1)}$$

$$TBNT_i = E(Y_{1i}|X_i, d=0) - Y_{0i} = X'_{1i}\beta_1 - \lambda_{\xi 1}\frac{\phi(\gamma_0 + W_i'\gamma_1)}{1 - \Phi(\gamma_0 + W_i'\gamma_1)} - Y_{0i}$$

2.2 The model used in the paper

The previous section aimed at presenting the general framework while this section presents the specific model used in our study. Generally speaking we still have two regressions where Y_{1i} represent the performance in case of treatment and Y_{0i} represent the performance for the same firm in the other state (i.e. no-treatment), exactly as in equation (1.1) and (1.2).

However, in order to use up fewer degrees of freedom and, therefore, obtain greater efficiency and therefore power (see Vijverberg (1993)) we slightly modified the second stage (equation (1.1) and (1.2)), using a single regression of the form:

$$dY_{1i} + (1 - d)Y_{0i} = d\alpha_1 + (1 - d)\alpha_0 + X_i'\beta + \zeta_i$$

Where $\zeta_i = du_{1i} + (1 - d)u_{0i}$

We also have an unobserved equation, which does not appear in the previous chapter:

$$C_i = Z_i\beta_1 + u_{ci}$$

In our model C_i could represent, for example, the private benefits that the controlling shareholders can exploit and that are likely to be the main drivers of the decision to use the dual share structure to retain control. Alternatively, Z_i is a vector of variables that are exogenous and independent of $(u_{1i}\ u_{0i}, u_{ci})$ and u_{ci} is a zero mean error, which describe the impact of unknown independent variables other than Z_i.

The treatment equation is now the following:

$$d_i = I(Y_{1i} - Y_{0i} - C_i > 0) = I(W_i\gamma + \xi_i > 0)$$

Where I is the indicator function, the W_i contains all the variables in X_i and Z_i and $\xi_i = u_{1i} - u_{0i} - u_{ci}$. As noted in the previous chapter, we can see that the decision to have dual structure (i.e. the treatment) depends on the difference in performance between the two states after taking into account the exploitation of private benefits.

Following the derivation in the previous chapter,

$$E(Y_i|W_i, d_i) = (1 - d_i)\alpha_0 + d_i\alpha_1 + X_i'\beta + E(\zeta_i|W_i, d_i)$$

where

$$E(\zeta_i|W_i, d_i) = d_iE(u_{1i}|W_i, d_i) + (1 - d_i)E(u_{0i}|W_i, d_i)$$

Given the joint normal distribution of the errors and the variance of ξ_i normalized to 1 (as in the general framework),

$$E(u_{ji}|W_i, d_i) = \lambda_{\xi j} E(\xi_i|W_i, d_i) = \lambda_{\xi j}\left[(1-d_i)\frac{-\phi(W_i\gamma)}{1-\Phi(W_i\gamma)} + d_i\frac{\phi(W_i\gamma)}{\Phi(W_i\gamma)}\right] \text{ with } j = 1,0$$

Where:

$$\lambda_{\xi 1} = \text{cov}(u_{1i}, \xi_i) = \text{cov}(u_{1i}, u_{1i} - u_{0i} - u_{ci}) = \sigma_1^2 - \sigma_{10} - \sigma_{1c}$$

$$\lambda_{\xi 0} = \text{cov}(u_{0i}, \xi_i) = \text{cov}(u_{0i}, u_{1i} - u_{0i} - u_{ci}) = \sigma_{10} - \sigma_0^2 + \sigma_{0c}$$

Furthermore, with our model it is possible with some limitations to develop a relative (also called comparative) advantage analysis after the estimation of $\lambda_{\xi 1}$ and $\lambda_{\xi 0}$. As clarified in Vella and Verbeek (1999) the focus is on the sign of the $\sigma_{10} = \text{cov}(u_{1i}, u_{0i})$: in fact, if $\sigma_{10} < 0$ (i.e. u_{1i} and u_{0i} are negatively correlated) then the companies that perform better relative to observables with dual class perform worse without it. This is called relative advantage. On the other hand, if $\sigma_{10} > 0$, those companies with dual structure that perform better than the characteristics would suggest would also perform better if they had non-dual structure. Therefore, they are hierarchically superior and their increased performance may not be attributed to the dual share structure. This is called absolute advantage Unfortunately, as shown in Vijverberg (1993), it is impossible to estimate σ_{10} directly. However, it is possible to get an idea of the sign of σ_{10} indirectly, as we will see later in the chapter. As we showed earlier

$$E(u_{1i}|W_i, d_i = 1) = \lambda_{\xi 1} E(\xi_i|W_i, d_i = 1) = (\sigma_1^2 - \sigma_{10} - \sigma_{1c})E(\xi_i|W_i, d_i = 1)$$

$$E(u_{0i}|W_i, d_i = 0) = \lambda_{\xi 0} E(\xi_i|W_i, d_i = 0) = (\sigma_{10} - \sigma_0^2 + \sigma_{0c})E(\xi_i|W_i, d_i = 0)$$

Where $\sigma_1^2 = \text{var}(u_{1i})$, $\sigma_{1c} = \text{cov}(u_{1i}, u_{ci})$ and $\sigma_{0c} = \text{cov}(u_{0i}, u_{ci})$

Assuming $\sigma_{0c} = \sigma_{1c} = 0$ (i.e. the unobserved component in the cost equation is uncorrelated with the errors in equation (1.1) and (1.2)[5]), then $\sigma_{10} > 0$ has no clear implication for the lambdas but $\sigma_{10} < 0$ implies that $\lambda_{\xi 0} < 0$ and $\lambda_{\xi 1} > 0$. This (i.e. $\sigma_{10} < 0$) is consistent with the relative advantage structure: we will better clarify this point in the following "Case 1". However, to provide some intuition, when there is relative advantage situation it is quite clear which firms are going to chose dual structure (i.e. those which do better with it) and which firms avoid it (those which do better without it). The lambdas provide no further information because it is clear which firms choose the treatment and which do not. On the other hand, with a positive sigma it is important to know the sign of the lambdas. The reason is that, even if the companies that do better with dual structure also do better without it and the companies that do worse with dual structure also do worse without it, we do not know which

[5] In other words, the unobserved determinants of the costs of dual class are uncorrelated with the error term in performance. In practice, it is impossible to verify if this assumption holds. The estimation would be work even if we remove this assumption. However, in this case we cannot take advantage anymore of the rich interpretation framework presented here.

regime the better ones choose. For that we need the lambdas. We know that the companies that perform better in one regime perform better also in the other (therefore, hierarchical structure) but the sigma does not tell us which regime the better firms choose. In other words, $\sigma_{10} > 0$ tells us that we have absolute advantage but it does not tell us which firms choose one or the other regime. Before discussing more in detail the 4 possible cases resulting from the lambda estimation, where these concepts are clarified, we need to make a short digression on the estimation of ATT and ATNT.

Estimating the coefficients through a single equation impacts the formulas for ATT and ATNT. In fact, we are implicitly assuming that $\beta_1$and β_0 are equal. Therefore, the formulas for ATT and ATNT simplify to the following:

$$\mathrm{ATT_i} = (\alpha_1 - \alpha_0) + (\lambda_{\xi 1} - \lambda_{\xi 0})\frac{\phi(\mathrm{W_i}\gamma)}{\Phi(\mathrm{W_i}\gamma)}$$

$$\mathrm{ATNT_i} = (\alpha_1 - \alpha_0) - (\lambda_{\xi 1} - \lambda_{\xi 0})\frac{\phi(\mathrm{W_i}\gamma)}{1 - \Phi(\mathrm{W_i}\gamma)}$$

It is clear from the formulas that the alphas alone are not sufficient to evaluate the ATT and the ATNT, as it would be the case if there were no self selection concerns. If both ATT and ATNT are negative, we can conclude that the dual structure has a negative impact on performance in terms of expectations. However, an additional analysis on the impact of the Mills ratio term would be interesting and, to the best of our knowledge, has been neglected in corporate finance papers that use this methodology. Given that the difference in lambdas is always positive, i.e. $\lambda_{\xi 1} - \lambda_{\xi 0} = \sigma_1^2 - 2\sigma_{10} + \sigma_0^2 = \mathrm{Var}(\mathrm{u_{1i}} - \mathrm{u_{0i}}) > 0$, and assuming,for example, that the difference in alphas is negative and larger in absolute value than the difference in lambdas; then both ATT and ATNT will be negative. Even if this implies that on average the dual structure destroys value, the companies without dual structure would suffer more from the introduction of dual structure than the companies that have it. This happens because the second term in ATT equation is positive and mitigates the impact of the negative difference in the alphas, while it reinforces the negative effect of the alphas in the ATNT equation. If this is true then we can notice that if

$(\lambda_{\xi 1} - \lambda_{\xi 0}) > 0$ then $\mathrm{ATT_i} > (\alpha_1 - \alpha_0) > ATNT$

Therefore it would be possible that the companies that choose the dual structure self-select such that those for which this share structure destroy less value use it and the others prefer other methodologies to introduce a wedge between ownership and control (cross ownership, pyramids, etc.) or they have no wedge at all. In other words, we could show that the way firms self select is consistent with the tradeoff between private benefits and lower performance. This could be a possible explanation for why companies introduce dual structure.

A common finding in existing work (see, for example,Masulis, Wang and Xie (2009)) proved that dual class structure is a way to obtain private benefits of control. The literature usually attaches a negative meaning to the private benefits. However, as already clarified in the introduction, dual share structure is not per se a way to exploit the minority shareholders: the price of the non-voting shares will incorporate the possible use of controlling shareholders' private benefits. There is, to the best of our knowledge, no paper studying if private benefits could be efficient. As already said companies can self select so that those that lose more from this share structure choose to be non dual and those that lose less choose dual capital. Therefore, the companies that have a lower cost in terms of efficiency per unit of private benefit should choose dual structure. For some controlling shareholders it could be more utility increasing the decision to exploit private benefits such as the founder's son's inheritance of CEO position) than receiving higher dividends. Therefore, they are ready to sell preferred shares at a very cheap price in order to exploit some private benefits. Consequently, it is also possible that the dual structure is indeed efficient.

We can now express the previous reasoning in the following general framework: theoretically four cases are possible.

Case 1: *dual structure firms better in all cases*. $\lambda_{\xi 1} > 0 \Rightarrow \sigma_1^2 > \sigma_{10}$ and $\lambda_{\xi 0} > 0 \Rightarrow \sigma_{10} > \sigma_0^2$. This implies that $\sigma_{10} > 0$. Therefore, in this case, those companies who do better with dual structure do better without it, too. However, they perform better with dual structure than without it: in fact, $\lambda_{\xi 1} - \lambda_{\xi 0} = \sigma_1^2 - 2\sigma_{10} + \sigma_0^2 = \mathrm{Var}(u_{1i} - u_{0i}) > 0$ therefore $\lambda_{\xi 1} > \lambda_{\xi 0}$.This case is consistent with a hierarchical structure, in which the better performing firms with and without dual structure choose to have dual structure. Conversely, the worse firms are the ones that choose non-dual share structure. If a company decides to have dual structure (i.e. $\xi_i > 0$) given that $\lambda_{\xi 1} = \mathrm{cov}(\xi_i, u_{1i})>0$, then $u_{1i} > 0$. This means that those who choose to have dual structure do better in terms of performance with this share structure than would be suggested by the observable characteristics. Conversely, if a company decides not to have dual structure (i.e. the $\xi_i < 0$) given that $\lambda_{\xi 0} = \mathrm{cov}(\xi_i, u_{0i})>0$ then $u_{0i} < 0$, which means that in case 1 the companies that do not choose dual structure do worse without dual share structure than would be suggested by the observables. It is really important to underline that this does not necessarily imply that the firms are not following an optimizing behavior. Companies that are choosing non-dual structure are doing poorly. However, it is possible that they would do even worse if they had dual class. In order to clarify this point we should reconsider the ATT and ATNT analysis clarified in the previous paragraph.

$$\mathrm{ATT_i} = E(Y_{1i} - Y_{0i}|X_i, d = 1) = (\alpha_1 - \alpha_0) + (\lambda_{\xi 1} - \lambda_{\xi 0})\frac{\phi(W_i\gamma)}{\Phi(W_i\gamma)}$$

$$\mathrm{ATNT_i} = E(Y_{1i} - Y_{0i}|X_i, d = 0) = (\alpha_1 - \alpha_0) - (\lambda_{\xi 1} - \lambda_{\xi 0})\frac{\phi(W_i\gamma)}{1 - \Phi(W_i\gamma)}$$

Regarding ATNT, even if the difference in alpha is positive (and therefore the dual structure seems to generate value), the term $-(\lambda_{\xi 1} - \lambda_{\xi 0})$ is negative. It is possible that the second term reduces or annihilates the positive effect of the first term. Therefore, for companies that do not have dual structure, the advantage from introducing dual structure can be small or even negative depending on the absolute value of the second term with respect to the first term. While, for ATT, the second term reinforces the effect of the first term. Therefore it is clear that in case 1 the dual structure generates more value for those companies that have dual structure. This is consistent with a self-selecting behavior of the firms.

Case 2: *non-dual class firms better in all cases.* $\lambda_{\xi 1} < 0 \Rightarrow \sigma_1^2 < \sigma_{10}$ and $\lambda_{\xi 0} < 0 \Rightarrow \sigma_{10} < \sigma_0^2$. This implies that $\sigma_{10} > 0$. In this case those companies that do not choose dual structure would have higher performance also if they would establish a dual share structure This case is consistent with a hierarchical structure, in which the better performing firms do not choose to have dual structure. If a company decides to have dual structure, then it is performing worse than suggested by the observables (i.e. $u_{1i} < 0$), while, a non-dual structure company performs better than would be suggested by the observables (i.e. $u_{0i} > 0$)[6]. In other words, thanks to $\sigma_{10} > 0$, we know that the companies better in one regime are also the ones that are better in the other regime (hierarchical structure) but we also know thanks to the lambdas that in this case the better firms choose the non-dual regime. In order to analyze this point we need to define the average non treatment effect on the treated:

$$\mathrm{ANTT_i} = E(Y_{0i} - Y_{1i} | X_i, d = 1) = (\alpha_0 - \alpha_1) + (\lambda_{\xi 0} - \lambda_{\xi 1}) \frac{\phi(\mathrm{W_i}\gamma)}{\Phi(\mathrm{W_i}\gamma)}$$

and the average non treatment effect on the non treated :

$$\mathrm{ANTNT_i} = E(Y_{0i} - Y_{1i} | X_i, d = 0) = (\alpha_0 - \alpha_1) - (\lambda_{\xi 0} - \lambda_{\xi 1}) \frac{\phi(\mathrm{W_i}\gamma)}{1 - \Phi(\mathrm{W_i}\gamma)}$$

If the difference in the alphas is positive, this could imply that all the companies would gain in terms of performance from not having dual class. Indeed, for the ANTNT, the second term, $-(\lambda_{\xi 0} - \lambda_{\xi 1})$, is always positive (because $\lambda_{\xi 0} - \lambda_{\xi 1} < 0$) and it reinforces the effect of the first term. That is non-dual firms profit from this share structure. While the ones that choose to have dual structure lose from this share structure (because the difference in alphas is positive) but they lose less than average due to the impact of $(\lambda_{\xi 0} - \lambda_{\xi 1})$, which is negative, in the ANTT. This is consistent with the idea that firms with dual structure probably choose this share structure because the private benefits are offsetting the lower performance generated by this share structure. In fact, on average, companies with dual structure will suffer less in terms of performance from this share structure. Eventually, the second term could also be

[6] Following the same reasoning as case 1, if a company decides not to have dual structure (i.e. $\xi_i < 0$) given that $\lambda_{\xi 0} = \mathrm{cov}(\xi_i, u_{0i}) < 0$, then $u_{0i} > 0$

higher than the first term in absolute value and, therefore, the ANTT could turn negative, making dual structure convenient for the companies that choose it.

Case 3. *Impossible.* $\lambda_{\xi 1} < 0 \Rightarrow \sigma_1^2 < \sigma_{10}$ and $\lambda_{\xi 0} > 0 \Rightarrow \sigma_{10} > \sigma_0^2$. Theoretically, this case is impossible, given our assumption that $\sigma_{0c} = \sigma_{1c} = 0$. In fact we are assuming that $\lambda_{\xi 1} - \lambda_{\xi 0} < 0$. If we now calculate the difference we find out that it equals the variance of the difference of the error terms, which was shown previously and must be positive by definition:

$$\lambda_{\xi 1} - \lambda_{\xi 0} = \sigma_1^2 - 2\sigma_{10} + \sigma_0^2 = var(u_{1i} - u_{0i})$$

Case 4. *Self selection.* $\lambda_{\xi 1} > 0 \Rightarrow \sigma_1^2 > \sigma_{10}$ and $\lambda_{\xi 0} < 0 \Rightarrow \sigma_{10} < \sigma_0^2$. In this case the sign of σ_{10} is not clear. We can only observe that, if a company decides to have dual structure (i.e. $\xi_i > 0$) given that $\lambda_{\xi 1} = \text{cov}(\xi_i, u_{1i}) > 0$ then $u_{1i} > 0$; this means that those who choose to have dual structure do better with this share structure than would be suggested by the observable characteristics. Conversely, if a company decides not to have dual structure (i.e. the $\xi_i < 0$) and at the same time $\lambda_{\xi 0} = \text{cov}(\xi_i, u_{1i}) < 0$ then $u_{0i} > 0$, which means that in case 4 the companies that do not chose the dual share structure also do better without dual share structure than would be suggested by the observables. Therefore, this case is consistent with an optimizing self selective behavior of the firms. In case that $\sigma_{10} < 0$ then there is no group of firms that is better than the other.

3. Variables

As already discussed in the introduction, the possibility of establishing a dual share structure can generate two opposite effects: a higher opportunity of exploitation of private benefits, which affects negatively the performance of the firm and damages the non controlling shareholders, and the possibility of retaining strong monitoring power aimed at generating value-creating management practices even if the controlling shareholders need to diversify their investment, which has a positive effect on performance. In a company without dual structure, it is often the case that the controlling shareholder has a substantial idiosyncratic risk exposure which she cannot diversify because of the need to retain a big stake in the firm. Preferred shares help to decrease the cash flow rights without changing the voting rights. This can be beneficial for the firm because the controlling shareholder is able to diversify her investment without loosening the monitoring power (Shleifer and Vishny (1986)); and, therefore, she will not impose on the firm the choice of an extremely safe investment policy. Therefore the controlling shareholder faces a tradeoff: on the one hand, if she reduces her voting rights too much then the power to monitor decreases; on the other hand, if her cash flow rights are too high she will impose excessive risk reduction on the investment strategies of the company. The dual share structure helps to balance this trade off. Furthermore, concentrated voting rights also reduce the need for building a coalition (see Hansmann (1996) for understanding the cost of building a coalition) with many other shareholders, generating a more immediate and effective control on the company. This positive effect of dual structure can be especially important in Italy, where there is a high percentage of family-run firms: that is, the dual structure allow the "experienced" family to retain control more effectively and to reduce their exposure to the specific risk of the company. The independent variables of the first stage, therefore, aim at explaining the decision to have dual structure and at adjusting for the impact for self selection. The effect of dual structure can be negative in terms of performance in case of exploitation of private benefit or positive in case of retained power to monitor.

Generally speaking, our data are extremely labor intensive and mostly extracted from the Bloomberg, Consob and Calepino databases. The reason for this choice is that Compustat and Datastream present many missing points on Italian dataset. The Consob data is highly reliable and is the result of compulsory disclosure to the market regulator. The only deficiency has to be found in the fact that stakes below 2% are not reported; however, this limitation is common to all studies that use market regulator data. Calepino is a report on the main financial data of all the quoted Italian firms that Mediobanca issues every year. Given the strict ties between this investment bank and Italian financial markets, the report exhibits accuracy regarding details and a strong level of precision.

The dataset consists of the 276 listed companies on the Italian stock market as of 24/01/11. The reason for a three weeks lag to the 31st December 2010 is the need to take into account that Consob reports are updated on the website with some lag due to the Christmas holidays. We dropped the cooperative

companies because they have quite unique characteristics that could bias our result[7]. In addition, we dropped the companies that went bankrupt or were suspended (due to an ongoing bankruptcy procedure): Socotherm Spa, Finarte Casa D'aste Spa, Everel Group Spa, Mariella Burani Fashion Group Spa, Seteco International Spa, Bioera Spa, I Viaggi Del Ventaglio Spa, Eutelia Spa. In addition, we dropped Giorgio Fedon & Figli Spa because it is quoted on the Paris stock exchange and Cell Therapeutics Inc because it is an American firm quoted in dollars. We use the yearly data at the date 31.12.2010 and we base our analysis on a calendar year.

3.1 The independent variables of the first and second stage

The vector Z contains the following variables, which should affect the decision to have dual structure:

$$W_i = \begin{bmatrix} FAM_i, FOUND_i, VTAGR_i, C5, WSTDE_i, WLNTA_i, DIPO_i, FAGE_i, DMED_i, DFAS_i, \\ VFLOAT_i, WVOL_i, WDE_i, WLIQ_i, WBETA_i, COMU_i, WVOLU_i, WSALE_i \end{bmatrix}$$

Family dummy (FAM) takes value 1 if the founder or the founder's family is a block holder, a member of the board of directors, CEO, member of the executive committee[8] or chairman of the firm. Our definition of family firms follows Anderson and Reeb (2003)'s: as a threshold for the family ownership we use the 2% stake, which is the minimum level that obliges the shareholder to report her stake to Consob[9]. Specifically, the dummy variable is generated discretizing a variable that sums up the founder's and her family's percentage ownership[10] in the company. This variable aims at capturing direct and indirect involvement of the founder or of her family in the company's activities. Indeed founders' families (or the founder herself) often see the firm as their own creation. This personal

[7] For cooperative banks, which represent the overwhelming majority of cooperative quoted companies, a specific legislation rules that the stake of each shareholder cannot exceed a certain percentage (usually 0.5) of equity capital. In addition, every shareholder has the right to have only 1 vote in the assembles, no matter how many shares she possesses.

[8] In some big companies the board of directors delegates some of its powers to the executive committee in order to increase decisional efficiency. In fact, the decisions on the delegated issues will be taken by a smaller group of members. The president of the board of directors, the vice-president, if he is nominated, and eventually the executive directors are, by law, members of the executive committee. The other members are nominated by the board of directors. Some powers cannot be delegated: for example, compiling the balance sheet or increasing company equity.

[9] The decision to use a dummy is clarified in note 14 of the Anderson and Reeb (2003). In fact, there is the possibility that the family ownership is so dispersed that it falls below the 5% threshold (which forces the shareholders to report their stake to SEC). Therefore, "US reporting requirement may cause a downward bias in our estimates of family ownership creating a bias towards zero in our testing". The dummy variable addresses this problem. This is true also for our analysis, even though we should have a lower bias given that our threshold is only 2%.

[10] The stakes of the shareholders with the same surnames are added up. In addition, shareholders voting through a unique trust are considered as a family group. If there is more than one founder then all the founders are considered as members of a unique family, even if they have different surnames. If the family holding (through which the vote is exercised) is entirely controlled by the family/founder (50%+1 of the votes) than the entire ownership of the holding is attributed to the family. For SOL SPA the stake of Sofia Annoni is not added to the family/founder stake (Stitching Airvision) because she remains outside the holding, while the other family members joined the holding. A family firm establishing a new company generate a new family firm and the member of the family at the time of the founding are considered as founders of the new company (for example Erg and Erg Renew or Pirelli and Prelios (previously called Pirelli Real Estate)).

relation could imply a higher probability of introducing the dual share structure to retain control. This could, in turn, imply either an exploitation of private benefits or a bigger ability of the family to monitor the company. The variables is generated using CONSOB data, news from the main newspapers (mostly "Il sole24ore", "Repubblica", "Milano Finanza", "il Corriere della sera") and the websites of the individual firms.

Founder dummy (FOUN): This dummy follows the reasoning of the previous variables but limits the effect just to the founder. This variable is established using the previous variable's methodology.

Then we introduced in the first stage two governance control variables. The rationale is that a less dispersed ownership results in a smaller role of dual structure as a mean for retaining control. The first variable, which we take into account, is the **voting agreement dummy (VTAGR)**. It captures the presence of a voting agreement between shareholders. The second is called **C5** and represent the percent owned by the 5 biggest shareholders[11]. If less than 5 shareholders exist then the variable reports the percentage in the hands of the existing large shareholders[12]. This variable captures the monitoring incentives, which can generate value-creating management practices or exploitation of private benefits. Both variables (VTAGR and C5) are generated with the data released from Consob.

Furthermore, we considered the **standard deviation of the estimated residual (WSTDE)** in the market regression (time interval 2005-2010, FTSEMIB is the market index). The variable was extracted from the Bloomberg database[13]. The reasoning for this variable is that if the firm's returns are volatile then the monitoring costs are higher and, therefore, the introduction of dual structure could be more convenient. Following the reasoning of Demsetz and Lehn (1985), this variable is preferred to other variability variables because "firm-specific risk is the factor most strongly associated with the type of instability for which control is most useful". The variable is winsorised at 5%.

Another variable taken into account is the size of the firm, measured from **total assets (WLNTA)**, in logarithmic form. According to Schranz (1993) and Demsetz and Lehn (1985), there is an inverse relation between the size of the firm and the equity concentration. Therefore, the incentive to issue preferred shares should be lower for large size firms given that they already tend to have dispersed ownership. Alternatively, a controlling stake in a big company is more risky due to the exposure to non-diversified risk. This could imply that the issuance of dual structure is more likely for big firms: the controlling shareholders might want to reduce their exposure yet retain the same voting power. This variable is taken from the Bloomberg dataset and is winsorised at the 5% level.

[11] This variable is generated neutralizing the treasury shares. Counting the people with the same surname as a unique shareholder and counting the people that vote through a trust as a unique shareholder as well. If no shareholder has more than 2% and, therefore, none is reported in Consob data, the value is set to zero.

[12] Stakes below 2% are not reported to Consob and, therefore, we could not take them into account. Consequently, large shareholders are those with a stake above 2%.

[13] =BDP(A8,"STD_DEV_ERR_OVERRIDABLE", "BETA_OVERRIDE_START_DT=20050101", "BETA_OVERRIDE_END_DT=20101231", "BETA_OVERRIDE_REL_INDEX=FTSEMIB Index")

Another variable that could contribute towards understanding the decision to have dual structure is the number of **years since quotation (DIPO)**. As noted by Schranz (1993), concentration of equity is expected to decrease over time as the founder's interest is dispersed among many heirs. The descendants could then use the dual structure to avoid an even further dilution of their voting rights (and consequently of the monitoring incentives and/or private benefits). In addition, the dual share structure lost popularity in more recent years due probably to an imitation of Anglo-American practice. This effect could be captured by the estimated coefficient of this variable. The year of quotation is taken from Calepino and complemented, in case of missing values, with Reuters (only 5 observations). The year considered is always the first year when the stock is issued even if it was issued in a different segment of the stock exchange (for example, Mercato ristretto) or if the company suffered a temporary suspension from trading.

We also considered, along the same line of the previous variable, the **firm age (FAGE)**. This variable is also extracted from the Calepino. It is particularly important to take into account the impact of this variable in the second stage. In fact, we need to control that the dual structure status does not proxy for the age of the firm and, therefore, to verify that this effect, not the dual structure, drives the effect on performance. As we showed in the previous section, it is implicit in the model that all the variables in the second stage are also incorporated in the first stage.

Another relevant variable is the **dummy for media sector (DMED)**. The classification is based on the GIC code[14], which can be found in the Bloomberg dataset. We considered the dummy to be one if industry group GIC is 2540. The rationale is that media companies are very rewarding in terms of private benefits and this justifies the dual structure as a mean to retain control.

We also introduced a **Dummy for fashion sector (DFAS)**. We considered the dummy to be one if industry GIC is equivalent to 252030. The rationale follows the reasoning of the previous variable: being involved in the fashion industry in Italy generates strong private benefits, given the appeal that this industry has.

Voting free float (VFLOAT) is a variable belonging to the Z vector as well. It represents the percent of voting shares that can be bought on the market. The variable is generated summing up all the shareholders' voting rights for each company using Consob data and then taking the difference from 100%[15]. We are implicitly assuming that any shareholding above 2% is a block, which are generally not very liquid and are rather difficult to sell. Investors should prefer to buy the "risparmio" shares

[14] There are some missing values in the GICS code. Bloomberg representatives informed me that they receive the data from S&P and therefore they are not responsible for that.

[15] Attention is paid to the repeated values for "usufrutto" (loaned shares) and management on behalf of others through trusts (intestazione a terzi) in order not to double count them: this means that when these ownership structures exist, the sum is made using the difference between the "% quota" value and the value in the "di cui senza voto" column that can be found on Consob website. In addition, the treasury shares were also neutralized.

when there is a unique shareholder controlling more than 50% of the voting rights (e.g. Buzzi Unicem spa) or when the voting free float is rather limited (e.g. Danieli spa's non-voting shares are more liquid than the common shares). In addition, a high free float increases the probability of using the dual structure to retain control, given that a high fraction of votes can be bought on the market. This variable will be used only in the first stage regression because it is used as an instrument.

Furthermore, we considered **stock monthly volatility (wvol)**. When shares are very volatile the big shareholders are likely to suffer a higher exposure to undiversified risk. Dual class shares can then be a way to reduce the risk keeping the power constant. This variable is taken form Bloomberg dataset and winsorised at the 5% level.

Another variable that could affect the decision to have dual share structure is the **debt-equity ratio (WDE)**. In fact, it is likely that the higher the leverage, the more likely it is to recapitalize using preferred shares. In fact, when leverage is already high and debt capacity is therefore almost exhausted[16], the controlling shareholder can have only one possibility to have her company raise capital without losing control: the issuance of preferred shares. It must be said that the debt-equity ratio can also be seen as endogenous: if there is too much power on the side of the controlling shareholder and too little on the side of the minority shareholders then the equities will sell at a big discount and, therefore, the company is better off issuing debt. The numerator is the net debt taken from Bloomberg and the denominator consists of the market value of equity, taking into account all kind of possible shares issued[17]. The variable is winsorised at the 5% level.

Another aspect that can influence the decision to have dual structure is **liquidity**: the more liquid the common shares are, the easier it is to establish the dual structure because the liquidity premium on non-common shares is also going to be lower. In addition, a firm whose risparmio shares have very little liquidity might be tempted to abandon such share structure. Assuming that there is a positive correlation between the liquidity of different kinds of shares, we could considered the **bid-ask spread (WLIQ)** on common shares as a good measure for liquidity. This variable is calculated as the absolute value of the difference between the average bid and the average ask price of common shares in the year 2010. This variable is taken from Bloomberg[18] and is winsorised at the 5% level. We also considered the variable **Volume (WVOLU).** It is the total number of shares traded in the year 2010 divided by the number of common shares outstanding. The variable is taken from Bloomberg[19] and is

[16] Italian firms tend to have high leverage.

[17] In order to calculate the market value of equity, we considered the prices taken from Bloomberg and the number of each type shares taken from Consob. If the shares are not negotiated, their book value is used for the price.

[18] The bid ask spread function in Bloomberg does not report historical values; therefore, the spread has to be calculated manually using the INTERVAL_AVG function when extracting the PX_BID and PX_ASK variables.

[19] The Bloomberg function is used through an interval sum function that sums up the values of the variable within a certain interval =BDP("ACE IM EQUITY"; "INTERVAL_SUM"; "MARKET_DATA_OVERRIDE=PX_Volume";

winsorised at the 5% level. The rationale is that a higher volume will increase the liquidity of the shares consequently reducing the liquidity premium requested for non-common shares.

Another important aspect that must be taken into account, especially relevant to the second stage is the **beta (WBETA)**. The beta is taken from Bloomberg and it is calculated in the period 2005-2010 using weekly returns and the FTSEMIB as market index[20]. The variable is winsorised at the 5% level. The idea is that the beta captures the systematic risk and therefore complements the standard error of the estimated epsilon (STDE). The rationale of this variable is always related to the risk: the higher this is, the more likely it is that the controlling shareholder wants to reduce its stake without giving control away. In addition, in the second stage this variable is very important to control for risk because of relation to returns.

The variable sales **(WSALE)** represents the logarithm[21] of the sales of the firm in 2010. It is mostly related to the second stage where we need to control for size. We complemented LNTA with this variable because the total assets could incorrectly capture the size when a firm as many intangibles goods, as for example in the fashion industry. This variable is taken from Bloomberg dataset. The variable is winsorised at the 5% level

The last variable that we considered is the **population** of the "comune" (administrative urban area) where the company has its headquarters, **divided by its assets (COMU)**. We obtain the location of the headquarters by using the Calepino[22]. The data about the number of residents is taken from ISTAT (the national bureau for statistics) at the following webpage: http://demo.istat.it/pop2010/index1.html. The point of this ratio is the desire to capture a situation where a controlling family decides to keep the corporation headquarters in a small town despite the size of the firm. If a company is located in a small village and retains the headquarters there, it is likely that the main shareholder enjoys being the most successful entrepreneur in the area and she has strong ties with the community. Therefore, it is more likely that she exploits dual structure to retain control, which can be exercised for good (lower monitoring costs) or for bad reasons (private benefits). The variable has nice properties because it is correlated with the decision to have dual structure but it should not affect performance. When

START_DATE_OVERRIDE=20100101";"END_DATE_OVERRIDE=20101231"). Equivalently the following Bloomberg function, taking a time series approach, gives the same results: BDH("ACE IM EQUITY";;"PX_VOLUME";"CY2010";"CY2010";"Dir=V";"Dts=H";"Sort=A";"Quote=C";"QtTyp=Y";"Days=T";"Per=cy";"DtFmt=D";"UseDPDF=Y").

[20] =BDP("ACE IM Equity","BETA_OVERRIDE_END_DT=20101231", BETA_OVERRIDE_REL_INDEX=FTSEMIB Index").

[21] This allows us to tackle the likely skewness of the variable distribution.

[22] The Calepino is more precise than Bloomberg or Compustat databases, which contain many mistakes concerning this variable. In Bloomberg, for example, for Dada spa only the name of the street is reported. In these two datasets, there are also some cases where the street of head offices is mixed up with the city where the headquarters are located. For the few companies (Falk renewable, Tesmec, Enel Green Power, Prelios) quoted in 2010 for which the Calepino does not have data, we used the Bloomberg definition of headquarters. The Borsa Italiana website agrees most of the times with the data reported in Calepino when the reported address is not aligned to that of Bloomberg and/or Compustat.

Calepino reports an administrative headquarters that is different from the main headquarters, the second is considered. For example, Luxottica spa has the headquarters in Milan but the administrative headquarters in Agordo (Biella). This is the place where the company was born and where the founder lives and works. Therefore, given the logic behind our variable, it is more correct to use the administrative headquarters. This variable is used only in the first stage (together with FLOAT).

In conclusion our vector X will be equal to:

$$X_i = \begin{bmatrix} FAM_i, FOUN_i, C5, VTAGR_i, WSTDE_i, WLNTA_i, DIPO_i, FAGE_i, DMED_i, \\ DFAS_i, WVOL_i, WDE_i, WLIQ_i, WBETA_i, WVOLU_i, WSALE_i \end{bmatrix}$$

Therefore the two variables that we be used only in the first stage are VFLOAT and COMU.

Finally it must be said that we wanted to introduce as control variable the managerial cash flow rights as Claessens, Simeon, Fan and Lang (2002) did but we experienced the same problem as Lins (2003) in finding these data (i.e. managerial compensation data).

3.2 Dependent variable of the first stage

The dependent variable of the first stage is the dual dummy (**DUAL**): the variable takes the value 1 if the company issued shares that have no voting rights and zero otherwise. The information on the rights that the share entitles to is obtained from the Calepino and verified on a Bloomberg terminal. On the other hand, the special shares (i.e. non-common shares, see below) are identified using the Consob dataset.

Before describing this variable a short discussion on the structure of Italian legislation on non-standard shares (i.e. non ordinary) is needed. There are three main groups of these shares: "privilegiate", "risparmio" and "azioni speciali".

The "privilegiate" stocks give some patrimonial advantages in the distribution of the earnings and/or in the distribution of the amount derived from the net assets when the company is liquidated. The privilege can consist of a higher seniority and /or of higher dividends than common shares. The exact privilege is clarified by the statute of the company once these shares have been introduced. The patrimonial rights can be freely identified but cannot consist in exclusion from participation in losses (*patto leonino*, art 2265, civil code). According to the Calepino, for the 6 companies that take advantage of this share structure these shares always attribute voting rights. Therefore, in our paper, for this kind of shares the variable dual takes zero value.

The "azioni speciali" can give voting rights only with respect to specific topics and/or shareholders' assemblies or can have frozen voting right until a trigger event reactivates the possibility of voting (for example, a trigger event could be the fact that there has been no dividend distribution for some years).

We have only three companies with this share structure (Aedes Spa, Gabetty Property Solutions Spa and Il Sole 24 Ore Spa). Gabetti[23] and Aedes[24] shares do not allow to vote in the ordinary and extraordinary assembly. Therefore, in this case, the variable dual will take value 1. The special shares of Il Sole 24 Ore allow for voting rights in both the ordinary and the extraordinary shareholders' meeting. However, nobody can have more than 2%+1 share of the capital made of special shares[25]. This limitation is due to the fact that this company publishes the most widely read Italian financial newspaper and, without this covenant, an eventual raider on the market could easily get control of the newspaper[26].

The "risparmio" (law 216/1974 and art. 145-147 TUF/1998 and law reform 2003) are the most popular. This is probably due to the fact that they are more standardised. As the preferred, they must give a patrimonial advantage freely identifiable by the statute but they by law are deprived of voting rights. The risparmio convertible to common are considered risparmio because the conversion has not been exercised yet at the time of the analysis.

For the three classes of shares a "non-standard assembly" will be set up aiming at defending the interests of the holder of a particular class of shares. Indeed any common shareholders assembly resolution that limits or changes the rights of the non standard shareholders requires their approval through a positive vote in the non standard shareholders assembly. Therefore, it is extremely difficult to damage or change the rights of this class of shareholders once special shares are established. In addition the Italian civil code explicitly forbids the issuance of multiple voting rights (art. 2351, 4th comma, civil code); therefore, a company can have either a 1 share 1 vote structure or a 1 share no vote. No other possibility is allowed and, as previously mentioned, a rather strict non-controlling shareholder defense is established. Furthermore, the sum of all kinds of non-common shares cannot exceed 50% of the total equity capital. This legal setting is very interesting for the study of the impact of share structures on performance.

Give the above structure, as already said, we defined as dual class companies those companies that have risparmio shares plus GABETTI SPA and AEDES SPA, which have non-voting "azioni speciali".

[23] Information about Gabetti special shares can be found in Calepino. Gabetti special shares can be converted in common shares within 60 day at a fixed exchange ratio after the issuance of the balance sheet of the company related to fiscal year 2013.

[24] Information found on http://www.aedesgroup.com/file_upload/AEDES_060_Finanziaria_COL-3.pdf. Aedes special shares were generated in exchange for non guaranteed bank credits and must be converted by the banks into ordinary shares by 2013.

[25] The source is the following corporate governance report: http://www.gruppo24ore.ilsole24ore.com/Public/IT/001_Header/030_Governance/Relaz%20corporate%20Governance_ITA.pdf. The special shares are the only ones quoted on the market while the common shares are not quoted and in the hands of Confindustria (employers'association).

[26] At the moment the ownership of the newspaper is in the hands of the Italian Association of Employers (Confindustria), which does not have to respect the 2% ownership limitation.

The aim of this variable is to establish when there is a wedge between ownership and control. Given the legislative Italian framework, the wedge can be generated in Italy only through non-voting shares.

3.3 Dependent variables of the second stage

Regarding the performance measure we considered three different measures. The first measure is the ROA (**wroa**) calculated as:

ROA = EBITDA/Total Assets

Regarding the constituent variables, EBITDA is taken from Bloomberg. However, even if we did not want to exclude financial firms because many take advantage of dual share structure, the dataset shows missing points for financial firms[27]. The variable is winsorized at the 5% level. The book value of total assets is taken from the same dataset and represents the annual value reported in the balance sheet at calendar date 31/12/2010.

A second measure of performance is the adjusted ROA (**wadjroa**):

ADJROA=(EBITDA+SG&A)/Total assets

SG&A represent the Sales, general and administrative expenses. The rationale is that the SG&A variable will capture most of the exploited private benefits, which take the form of higher salaries to managers related to the controlling shareholder. This variable is calculated using the Bloomberg dataset[28] and it is winsorised at the 5% level. Given some missing values of the variable SG&A, the sample decreases in size for the analysis run with this variable.

Finally, we run the analysis again using the logarithm of Q ratio (**wtq**).

$$Qratio = \ln\left(1 + \frac{\text{TA} - \text{BVE} + \text{MVE}}{\text{TA}}\right)$$

Where BVE is the book value of equity and MVE is the market value of equity. We add one because we want to avoid the possibility that the variable takes a zero value (i.e. logarithm of one) when the book value of equity equals the market value of equity (that is, when there are no growth opportunities). The book value of equity is taken from Bloomberg. The MVE follows the same methodology used for the Debt-equity ratio. The variable is winsorized at the 5% level. We considered the logarithm because Q is skewed and asymmetric (Masulis, Wang and Xie (2009)).

[27] The reason is that EBITDA is calculated as Operating Income (IS033) + Interest Expense (IS022) + Depreciation & Amortization (CF011). However, as reported in Bloomberg variable description, this sum "does not make sense for companies in the financial format where interest is a major component of revenue".

[28] I tried to use the Bloomberg variable ARD_SELLING_GENERAL_ADMIN_EXP, where ADR stands for "as reported data". This variable is mostly made of missing points because Italian firms are not obliged to report this data. Therefore I had to use TRAIL_12M_SGA that is a Bloomberg developed self-calculation for this value using the quarterly reports where allegedly most of the companies report the SG&A.

4. Empirical analysis

4.1 Descriptive statistics

As reported by Bianchi and Bianco (2006), there has been a marked decline in the popularity of dual share structure[29]: in 1990 39% of quoted firms had dual shares. In 1994 Zingales (1994) reports that one third of the quoted companies on the Milan stock exchange had dual structure. While in the paper of Pajuste (2005) the reported percentages for dual class firms are 41% in 1995 and 34.6% in 2001. According to Bianchi and Bianco (2006), in 2005 the percentage of non-voting shares had gone down to 14%[30]. In line with their findings, in our sample we find that only 12.5% of Italian quoted companies have non-voting shares in 2010. On the other hand, the presence of family firms is still extensive, reaching 56% of the sample (about 33% of the firms are founder firms). This underlines the strong relevance that family capitalism has in Italy and the strong impact of the first generation in shaping profitable and successful companies that ultimately are taken public.

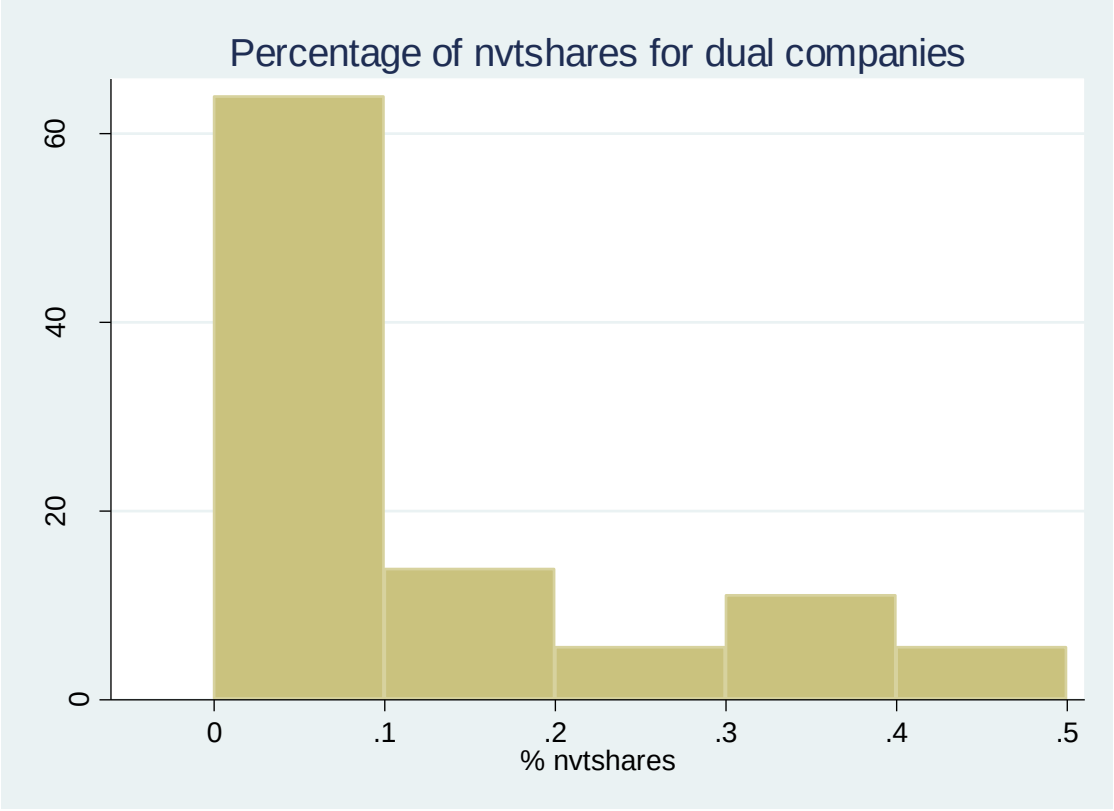

Figure 1: Percentage of nvtshares for dual companies - Histogram showing the percentage of non-voting shares over the total number of shares.

It is interesting to notice in figure 1 that 64% of the firm with dual share structure, issue a proportion of non-voting shares that is less than at most 10% of the total issued shares. This can be related to the

[29] This phenomenon took place also in Canada. See Allaire (2006)
[30] Bianchi and Bianco (2006) refer only to non-voting shares (i.e. mostly risparmio) while the other authors refer to all kinds of non standard shares.

fact that non-voting shares are quite expensive, as we will make clear later in the analysis. Furthermore, it is possible to notice that only few companies reach the 50% legal threshold for non-voting shares imposed by the legislator[31].

Table 1

The companies with the biggest wedge between control and ownership

The table shows the main characteristics of those dual companies whose share consist of non-voting shares for more than 10% of the total issued shares: intensive use of dual share structure can be noticed among established family firms. The variable percentnv stands for the percent of non-voting shares on total shares

Companies	percentnv	fam	Fage	Ta
DANIELI SPA OFFICINE MECCANICHE DANIELI & C. SPA	0.49721	1	48	4497.13
ITALMOBILIARE SPA	0.42421	1	64	11953.39
ITALCEMENTI SPA FABBRICHE RIUNITE CEMENTO	.3731438	1	145	9812.72
SAES GETTERS SPA	.3346317	1	70	185.14
AEDES SPA	.3327253	0	105	955.64
TELECOM ITALIA SPA	0.31008	0	78	86181.00
FONDIARIA - SAI SPA	.2547909	1	89	45832.67
GABETTI PROPERTY SOLITIONS SPA	.2531668	1	36	247.07
BUZZI UNICEM SAP	.1975722	1	30	6059.46
MONTEFIBRE SPA	.1666667	0	92	186.33
BANCO DI SARDEGNA SPA	.1275381	0	57	13630.03
ZUCCHI SPA - VINCENZO ZUCCHI	.1232692	1	57	276.84
BANCO DI DESIO E DELLA BRIANZA SPA	.1013963	1	101	8308.78

In order to analyse more in detail which firms make extensive use of non-voting shares we find that companies with a percentage of non-voting stocks above 10% are mostly established family firms that became rather big companies. This finding can be related to the fact that this share structure has accompanied a generation of family firms at the end of seventies and in the eighties but it seems to be falling out of fashion nowadays. Indeed, share structure once established has a tendency to be persistent in time. This is probably also due to the legal procedures required to change it. In particular, in order to unify company shares a positive vote from the majority of the shareholders owning the non-voting shares plus a qualified majority vote in the extraordinary shareholders' meeting are required. Therefore, the firm has to convince its preferred shareholders of the benefits of the operation for them (i.e. to remove their patrimonial advantages) and this could eventually prove in some cases quite costly due to the advantage in terms of exchange ratio (between voting and non-voting) that must

[31] Art.2351, 2nd subparagraph, civil code.

be granted to non-voting shareholders. This is a necessary but not sufficient condition: in fact, common shareholders too must be convinced of the convenience of the share unification.

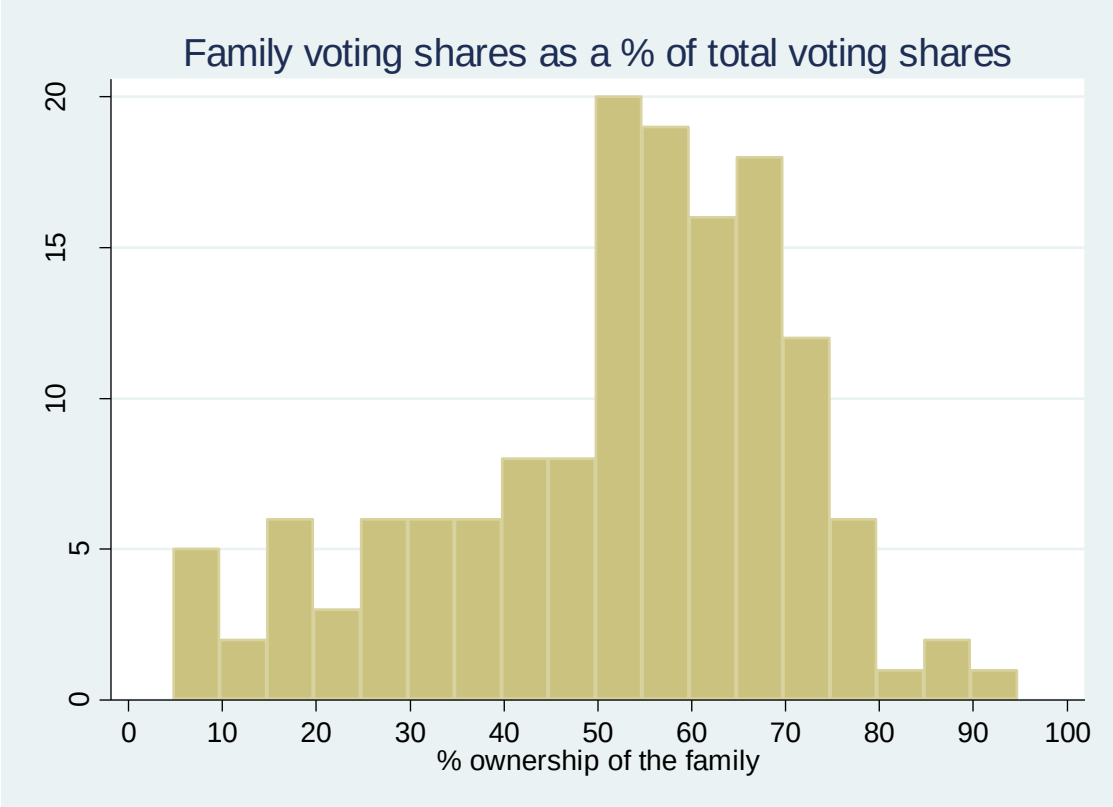

Figure 2: Family voting shares as a percentage of total voting shares - The histogram shows the percentage of voting shares in the hands of the family for all quoted family firms.

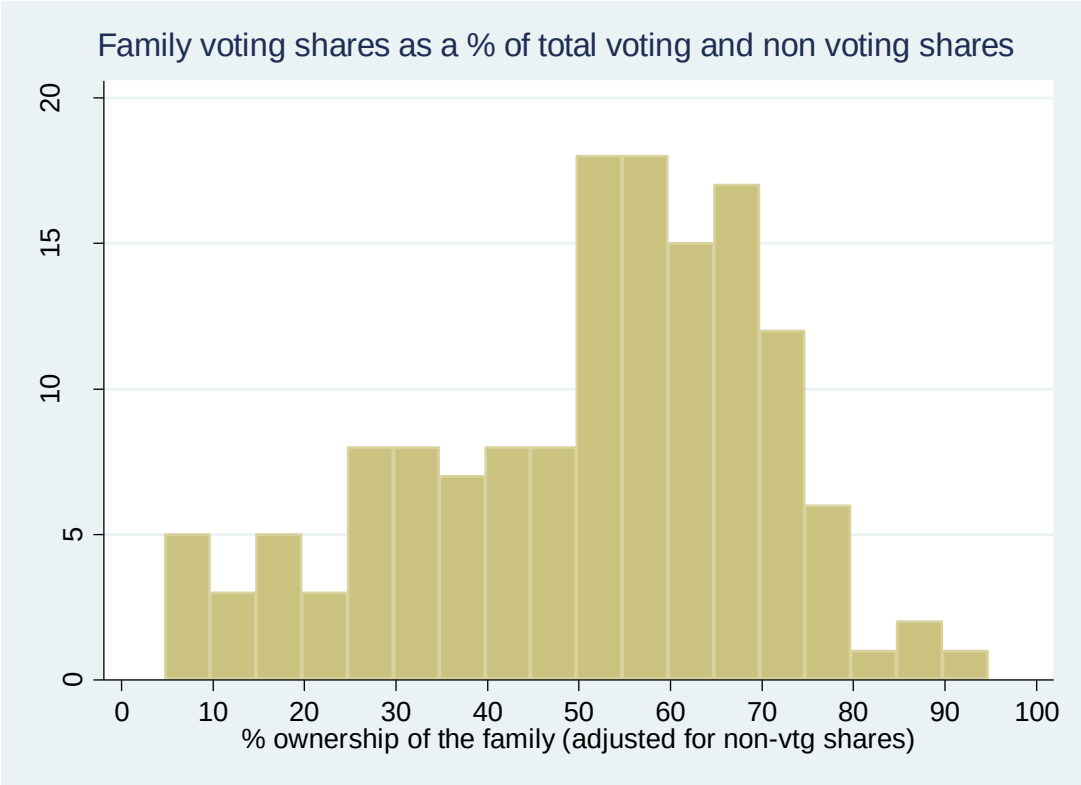

Figure 3: Family voting shares as a percentage of total voting and non-voting shares - The histogram shows the number of voting shares in the hands of the family divided by all the issued shares (common and non-voting) for all quoted family firms.

Taking a closer look at family firms, in figure 2 it is possible to notice that 67% of family firms retain a 50% or higher control stake in terms of votes (in absolute terms, 101 firms out of 151 family firms). Families try to keep control using family trusts and more rarely voting agreements when family ownership is dispersed. This is still confirmed in Figure 3, where we divided the number of voting shares in the hands of the family by the total number of shares (i.e. voting and non-voting)[32]. As it is possible to notice, 64% (in absolute terms, 96 firms out of 151 family firms) of the family firms have an ownership above 50% even if non-voting shares were to be treated as voting. Therefore, the family variable does not seem to be strongly related to the use of dual share structure as a mean to retain control, given that most families already have majority voting power. In addition, family firms do not seem to make massive use of dual structure given that only 16 family firms (out of 151) make use of dual share structure. However, when they use it, the non-voting shares help the family to retain control. That is, dual share structure matters for the few family firms that decide to use it.

[32] We could not find any dataset allowing us to know who is the owner of the non-voting shares. Therefore, we assume in figure 3 that the families hold only voting shares. This should reinforce our results given that it is not likely that for all companies the families do not possess any non-voting shares.

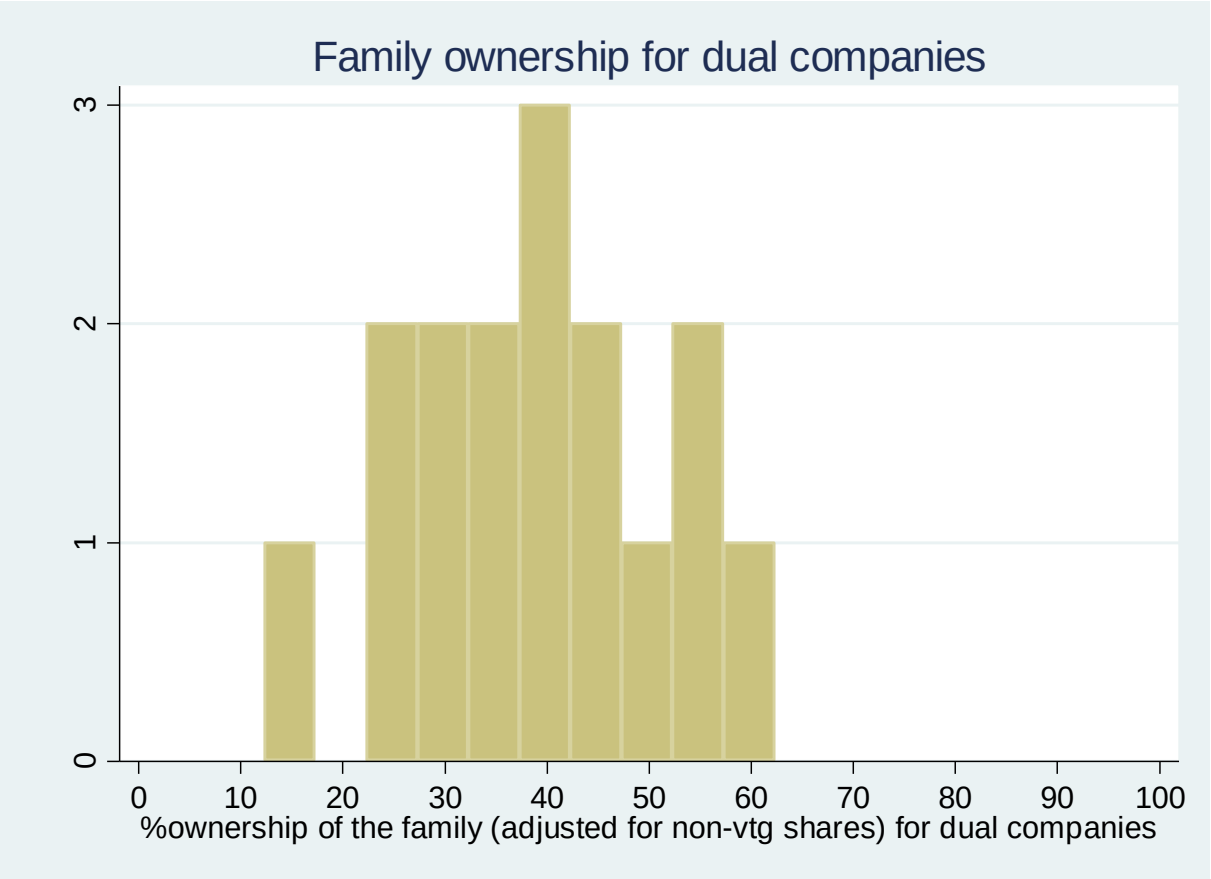

Figure 4: Family ownership for dual companies - The number of voting shares in the hands of the family divided by all the issued shares (common and non-voting) for all quoted family firms that use dual structure.

In fact, for 80% (4 out of 16) of the family firms taking advantage of dual structure the percentage ownership of the family is below 50% (see Figure 4). It is also interesting to notice that even if the rationale for the issuance of non-voting shares is for most family firms related to retaining control, there is a small group of firms for which this reasoning is not justified: for 20% of the family firms the control is assured even without the use of dual share structure. This makes us reflect on the fact that dual structure is not always aimed at retaining control.

We now move from an analysis focused on family firms to an analysis based on all firms (i.e. family and non family owned). The coming three graphs are based on voting free float (vfloat), which is seen as a mean to gain control. The reason why we need to use voting free float instead of ownership, on which the family firm analysis is based, is that it is extremely difficult to find out who the controlling shareholders in non-family firms are. While information on the founding family can be easily extrapolated with the methodologies explained in the variables section, the insiders' ownership is not very clearly identified for two reasons. First, it is very difficult to define objectively who the insiders are among the stakeholders reported by Consob and second it is often impossible to understand if they have some ownership through offshore trusts or other legal forms. Therefore, we approached the problem with a reverse methodology, using the voting free float, which can be extracted from Consob

data. As we can note in figure 5, in Italy only 28% of the companies with dual structure have a voting free float higher than 50%. As shown in picture 6, this finding holds also if we adjust for the impact of non-voting shares[33]. In other words, for more than two thirds of the Italian quoted companies using dual structure, insiders have a substantial control of the company; this contrasts with our finding concerning family firms, for which dual structure, if used, is very relevant. This characteristic of the Italian market seems to differ from the finding of Gompers, Ishii and Metrick (2010). In their paper they showed that insiders in dual class US firms have on average approximately 60% of the voting rights but only 40% of the cash flow rights. So it seems that dual structure in the US, when used, is very relevant to retain control.

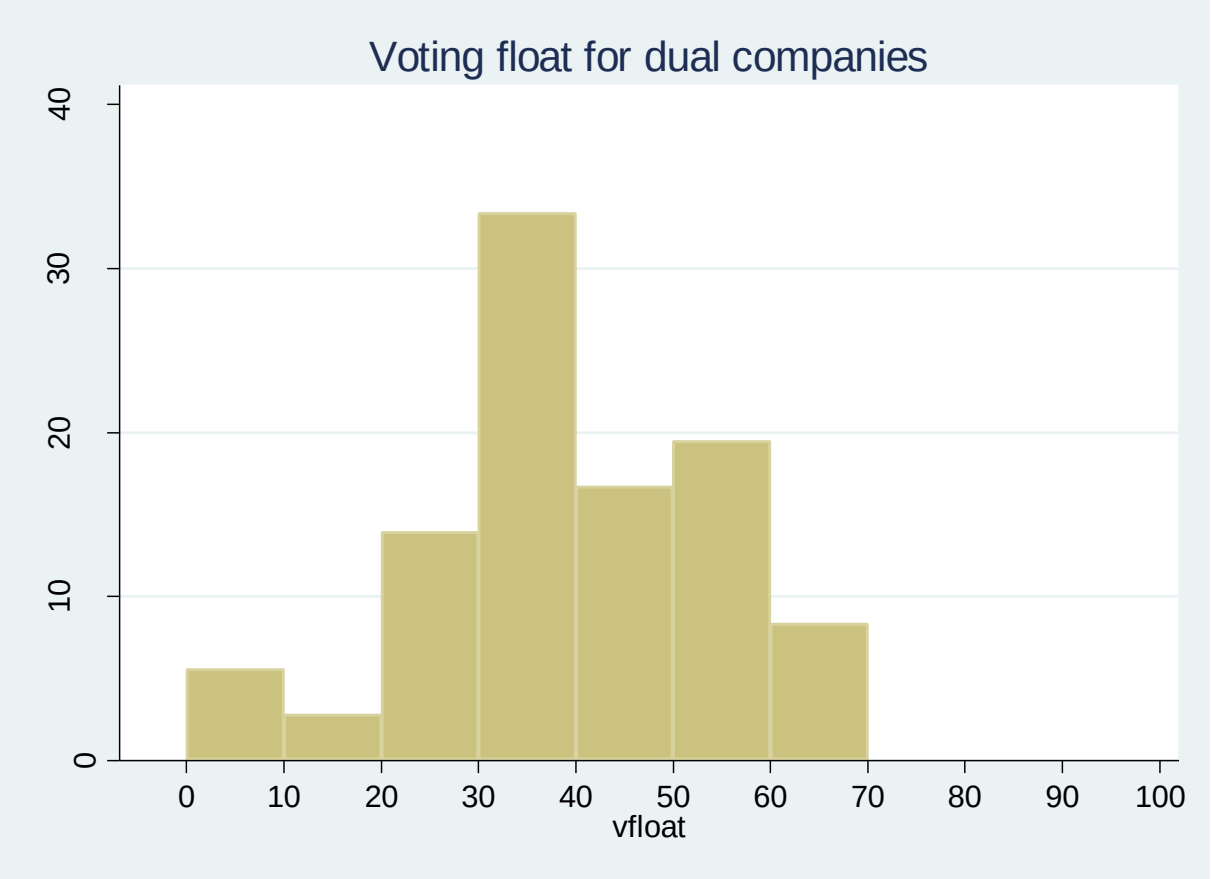

Figure 5: Voting float for dual companies - The histogram shows the free float of voting shares for companies with dual structure

[33] In the picture 6 the variable on the x axis is the ratio between the number of voting shares on the market and the total shares (i.e. voting and non-voting) issued by the company. Therefore, the x axis variable adjusts for the impact of non-voting shares.

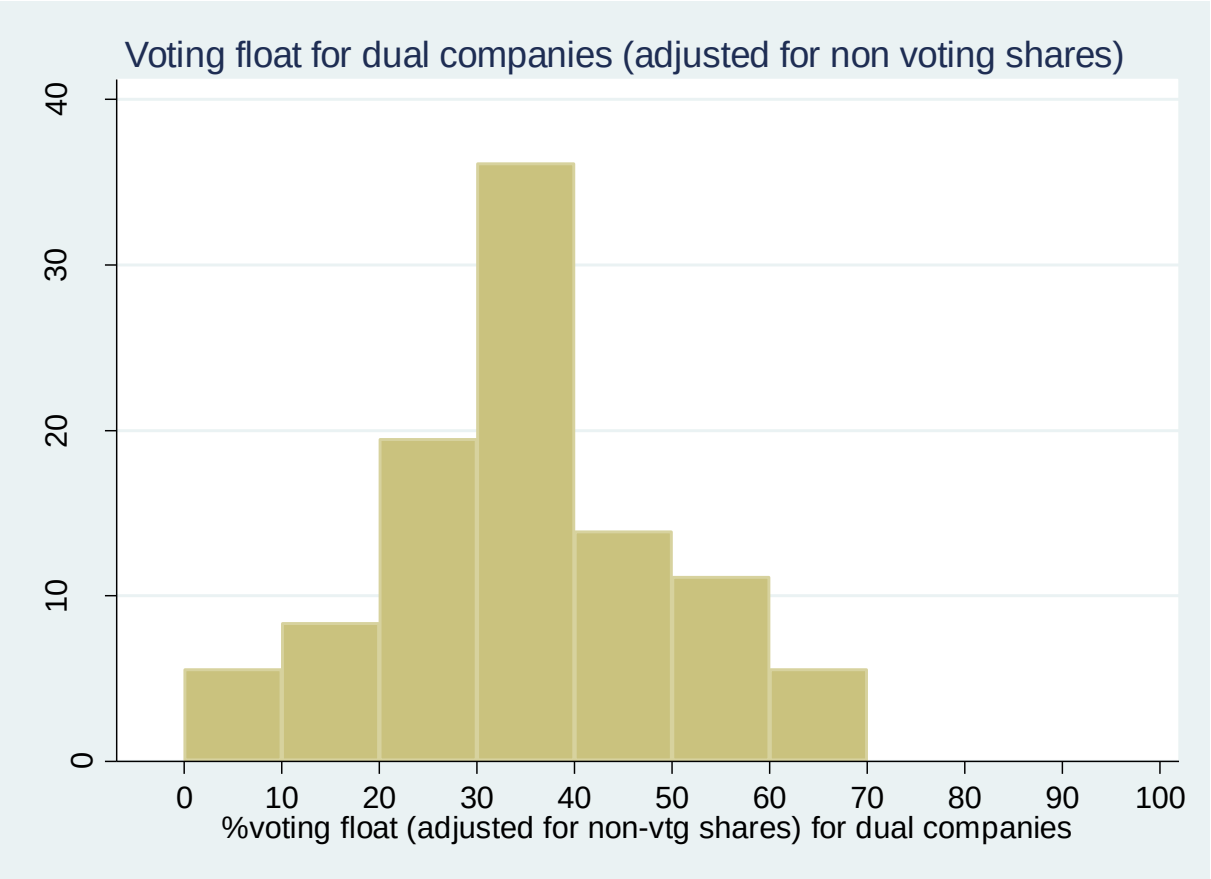

Figure 6: Voting float for dual companies (adjusted for non-voting shares) - The histogram shows the free float of voting shares for companies with dual structure once we adjusted for the impact of non-voting shares: the variable on the x axis is the ratio between the number of voting shares on the market and the total shares (i.e. voting and non-voting).

Finally, we move our attention from dual companies to all companies in our sample in order to find out that the unassailability of Italian companies is not only true for family firms but it is also a general characteristic of the Italian stock market. As we can notice in Figure 7, 83% of the Italian quoted companies are unassailable: that is, most of them have a free float in terms of voting shares below 50%. Italian capitalism is indeed based on a certain number of investors (mostly families) that act as insider in many different firms and make many companies unassailable.

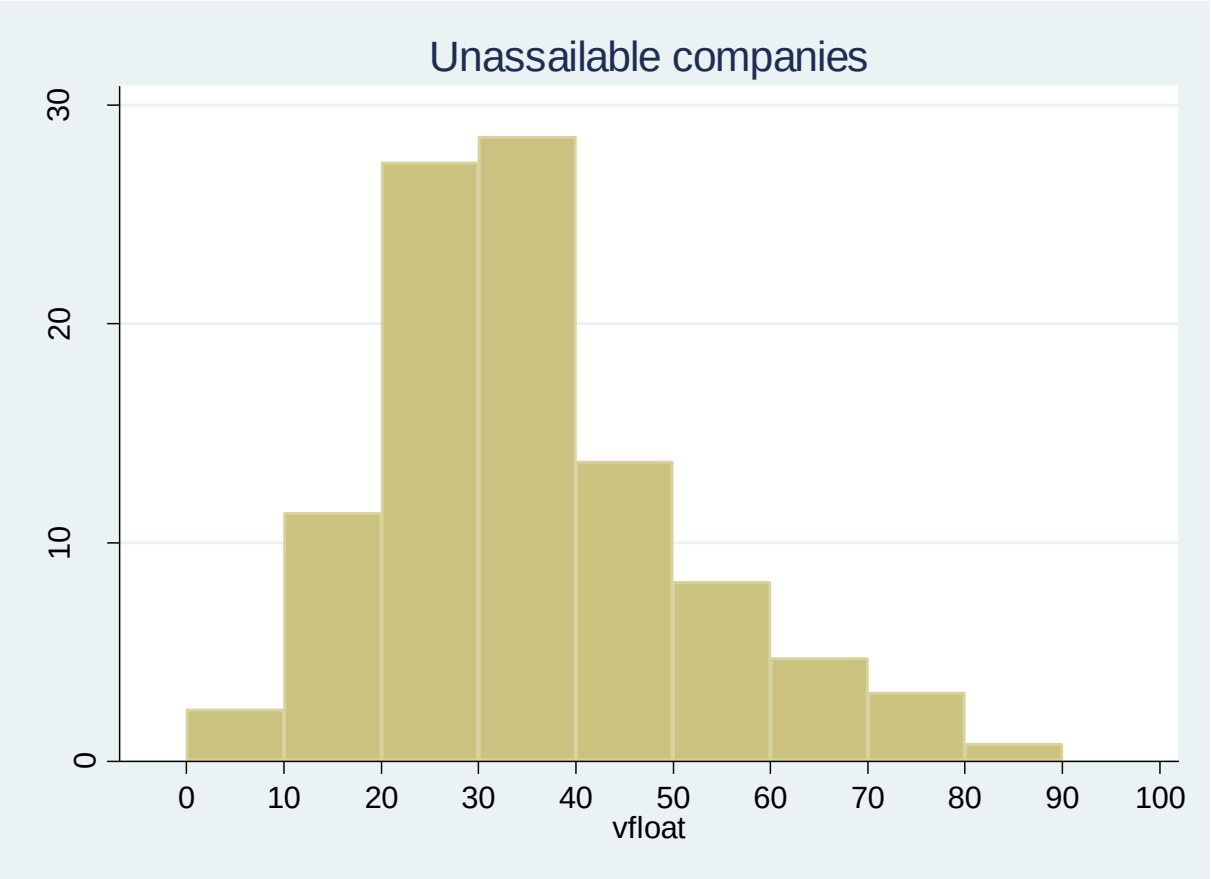

Figure 7: Unassailable companies - Histogram representing the free float of voting shares for all quoted firms on the Italian stock market.

If we focus our attention on table 2, where the descriptive statistics are reported, it is interesting to notice that the P value of the mean comparison test is significant for Tobin's Q and insignificant for wroa (see table 2). With all the limitation of the univariate comparison related to the T-test, this seems to suggest that there is a difference in mean between the Tobin's Q of companies having the dual share structure and those that do not have it. In contrast, for wroa this does not seem to be the case. As we will see later this results are in line with the findings of the switching regression model. However, the means suggest that dual companies tend to have a smaller wtq[34]. In line with the previous observations, it is possible to notice that fewer family and founder companies have dual share structure.

[34] It must be considered that wtq is a logarithm. This is the reason why the values are below one. For more references, see chapter 2 on the variables.

Table 2

Descriptive statistics

The table shows the descriptive statistics for the variables that we use later in the analysis. Q1, Q2 and Q3 are respectively the first quartile, the median and the third quartile. The last column describes the p value of the mean comparison test between dual and non dual.

Var	Total					Only non dual					Only dual					P value
	Mean	Sd	Q1	Q2	Q3	Mean	Sd	Q1	Q2	Q3	Mean	Sd	Q1	Q2	Q3	ttest
Wtq	0.74	0.18	0.62	0.70	0.81	0.76	0.19	0.63	0.71	0.84	0.66	0.11	0.60	0.66	0.69	0.004
Wroa	0.06	0.08	0.01	0.06	0.10	0.06	0.08	0.01	0.06	0.10	0.04	0.06	0.01	0.06	0.09	0.341
Fam	0.58	0.49	0	1	1	0.60	0.49	0	1	1	0.44	0.50	0	0	1	0.075
Foun	0.34	0.47	0	0	1	0.38	0.49	0	0	1	0.08	0.28	0	0	0	0.000
Vtagr	0.37	0.48	0	0	1	0.35	0.48	0	0	1	0.53	0.51	0	1	1	0.039
c5	62.52	16.25	53.67	65.33	73.25	63.36	16.25	54.661	67.016	73.928	57.37	15.51	45.16	57.82	64.09	0.040
Wstde	4.94	1.81	3.50	4.46	5.80	4.97	1.81	3.5795	4.5084	5.8402	4.73	1.81	3.40	4.36	5.31	0.448
Wlnta	6.47	1.98	5.06	6.04	7.81	6.15	1.81	4.8428	5.8312	7.2407	8.38	1.93	6.66	8.42	9.60	0.000
Dipo	1993.4	20.51	1990	2000	2006	1996.3	17.55	1996	2000	2006	1974.0	27.58	1963.5	1983.0	1995.0	0.000
Fage	40.53	37.53	14	27	51	34.77	32.54	13	24	40.5	76.03	46.45	36.00	78.00	104.00	0.000
Dmed	0.07	0.26	0	0	0	0.07	0.25	0	0	0	0.08	0.28	0	0	0	0.742
Dfas	0.07	0.26	0	0	0	0.07	0.26	0	0	0	0.08	0.28	0	0	0	0.822
Wvol	35.86	12.62	27.4	32.74	41.01	35.44	12.68	26.34	32.43	40.30	38.37	12.14	31.37	34.75	44.38	0.197
Wde	1.43	2.16	0.18	0.70	1.76	1.18	1.84	0.14	0.58	1.45	2.91	3.18	0.68	1.79	3.28	0.000
Wliq	0.08	0.11	0.02	0.04	0.10	0.09	0.11	0.02	0.05	0.11	0.05	0.08	0.01	0.02	0.05	0.054
Wbeta	0.66	0.27	0.45	0.64	0.86	0.62	0.25	0.44	0.60	0.82	0.88	0.28	0.73	0.95	1.09	0.000
Wvolu	0.69	0.78	0.14	0.39	0.95	0.62	0.72	0.13	0.36	0.79	1.13	0.99	0.30	0.82	1.96	0.000
Wsale	5.55	2.04	4.22	5.42	6.92	5.27	1.91	4.03	5.26	6.55	7.30	1.92	5.74	7.67	8.55	0.000
Vfloat	35.17	15.63	24.8	32.68	43.56	34.59	15.68	24.44	31.73	43.01	38.69	15.09	31.07	37.91	50.50	0.145
Comu	4654.3	12620.8	32.7	285.0	2444.2	5312.5	13494.0	53.81	433.33	3138.35	650.31	1612.1	11.41	40.46	207.73	0.039
Dual	0.14	0.35	0	0	0	0	0	0	0	0	1	0	1	1	1	.

4.2 OLS regression

As it is possible to notice the quality of the data is somewhat poor given that the many missing points reduce the sample size. We have tried to address this problem analyzing different datasets (Reuters' Datastream and Compustat). However, the best dataset available for the variables that we needed is Bloomberg.

Given the fact that firms could self select into the treatment, a simple OLS regression leave the self selection concerns unaddressed. Therefore, table 3 results must be taken *cum grano salis*. It is possible to notice, however, that the dual dummy is not significant. This would imply that the dual share structure seems to have no impact on both dependent variables, return on assets (wroa) and Tobin's Q (wtq). This result is partially confirmed by the analysis that follows, which addresses self selection issues, when we use ROA as dependent variable. However, when we use Tobin's Q instead we get different results. As said, these considerations based on a simple OLS could be drawn from very biased coefficients and therefore might be not very reliable.

Table 3

OLS Regression

The sample consists of Italian quoted firms. In column (1) and (2) the dependent variable is respectively the ROA and the Tobin's Q ratio. The detailed variable definitions are provided in chapter 5. The stars stand for statistical significance at the 1,5,10% levels: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are reported in parentheses.

Dependent VARIABLES	(1) wroa	(2) wtq
Dual	-0.0133	-0.0351
	(0.0173)	(0.0395)
Fam	-0.00375	-0.0400
	(0.0126)	(0.0300)
Foun	0.0121	0.0423
	(0.0126)	(0.0303)
Vtagr	-2.51e-05	0.0124
	(0.0103)	(0.0243)
c5	0.000204	-0.00211
	(0.000993)	(0.00235)
Wstde	-0.000361	0.00692
	(0.00464)	(0.0110)
Wlnta	-0.0187***	-0.0213
	(0.00650)	(0.0144)
Dipo	0.000315	0.000910
	(0.000370)	(0.000795)
Fage	8.30e-07	-0.000414
	(0.000227)	(0.000471)
Dmed	0.0418**	-0.0317
	(0.0172)	(0.0424)
Dfas	0.00547	0.106**
	(0.0174)	(0.0425)
Wvol	-0.00312***	-0.00326**
	(0.000604)	(0.00143)
Wde	0.00126	-0.0163***
	(0.00269)	(0.00604)
Wliq	0.0721	0.209*
	(0.0473)	(0.111)
Wbeta	-0.0150	-0.0453
	(0.0240)	(0.0566)
Wvolu	0.0187**	0.101***
	(0.00939)	(0.0221)
Wsale	0.0248***	0.0169
	(0.00556)	(0.0126)
Vfloat	7.19e-05	-0.00451*
	(0.00108)	(0.00256)
Comu	-5.37e-07	1.47e-06
	(4.47e-07)	(1.09e-06)
Constant	-0.502	-0.670
	(0.761)	(1.622)
Observations	207	224
R-squared	0.409	0.299

4.3 The first stage: The probit regression

In this chapter we will analyse the decision to have dual structure. From the result in the first stage (table 4) it is possible to address some of the points on which our analysis is based. It is interesting to notice that only the variables not related to private benefits tend to be significant. This seems to suggest that the exploitation of private benefits is unlikely to be the main reason why firms adopted dual structure, at least in the Italian market.

Before going into the details, it is convenient for a better understanding to make a short excursion into the decision to introduce saving shares, which are the near totality of the non-voting shares issued on the Italian market, under the Italian legislation. The possibility to issue "saving non-voting shares" was introduced in the nineteen-seventies (law 216/1974) with the aim of easing the participation of small savers (therefore the name) to stock exchange investments[35]. The legislator, in fact, deemed that small investors would be more interested in patrimonial advantages (higher and/or cumulative dividends) than in administrative rights, like votes. Therefore, the additional opportunity to issue non-voting shares was seen at the time in a positive perspective, even if it is conceivable that in the seventies too (and later) this share structure could have been used for private benefits exploitation as well as a mean for retaining monitoring power. These shares had their moment of glory in the eighties. However, already in the nineties they lost the favor of the market. In particular, it is likely that institutional investors, which in the seventies were not very relevant, have mistrusted them, probably influenced by the main finding of the literature about entrenchment of the management (preferred shares were seen as an antitakeover provision[36]) and private benefit exploitation. Therefore, it is probably the case that some firms already quoted in the eighties or earlier decided to unify their shares in order to attract big institutional investors, while some other firms retained them because they did not need to abolish them in order to attract institutional investors, probably due to their reputation. That is, institutional investors may be willing to buy the shares of some renowned companies despite the dual class share structure because of their name and reputation. This is probably the reason why the variable wsales, which is closely related to the size of a firm, is not significant in the first stage[37] but fage is. The fact that a firm is old implies that it should have an established reputation and that it probably introduced the dual share structure when it was still favorably appraised by the market. Indeed, among the few remaining users of this share structure we find some of the biggest, best-

[35] In 2003 the possibility to issue risparmio shares was extended to non-quoted companies. This shows that in the view of the Italian legislator the experience with dual share structure was so positive that an extension of its application was allowed.

[36] On the point see Gompers, Paul A., Joy Ishii, and Andrew Metrick, 2010, Extreme governance: An analysis of dual-class firms in the united states, *Review of Financial Studies* 23, 1051-1088.

[37] Alternative explanation about the insignificance of wsales can be related to statistical issues. Some variables could indeed be highly correlated with size (like wlnta, fam, founder, fage). Therefore, we tried to see if this effect arises with the variable that is most likely correlated: lnta. If we remove lnta from the probit regression, we find that the variable sales is still not significant. Conversely, if we drop sales, the variable lnta remains insignificant. An alternative possible statistical explanation is that only big firms typically make use of the stock exchange as a mean for financing in Italy and, therefore, there is not enough variation in the variable that could be captured in the regression.

established and most renowned Italian companies: Fiat, Intesa San Paolo, Unicredit, RCS mediagroup, Banca Monte dei Paschi, Pirelli, Telecom Italia and Gemina[38]. Interestingly the three biggest Italian banks and some big insurance companies make use of this share structure. Another interesting example is Exor, the Agnelli family holding. In order to simplify the share structure, in 2009 the family decided to merge the two holding companies IFIL and IFI and to rename them Exor. However, the same share structure, which consists of saving shares, preferred shares and common shares, was retained. The reason why they did not change the structure is probably that the reputation of the family allows this firm to have this share structure without paying in terms of reduced share price (and consequently reduced Tobin's' Q) or private benefits are very relevant. In addition, in firms tightly controlled, the unification would be of small advantage to non-voting shareholders because they do not benefit much from the voting rights but they lose the patrimonial benefit. This results in the likely opposition of these shareholders to the unification, unless a very attractive exchange ratio is offered. A US case similar to Exor is probably that of Berkshire Hathaway or of Google. The presence of A and B shares does not seem to have a substantial impact on the price.

As already noted, the decision to unify the shares requires the vote of the saving shareholders and a change of statute, implying a vote in the extraordinary assembly (subject to stricter majorities). Of course, in order to convince the saving shareholders favourable conditions must be offered. This implies that unification can be very costly and does not make sense unless this share structure proves really damaging in terms of price. That is the reason why only those companies for which the dual share structure did not make sense decided to unify.

The use of dual share structure, however, is not limited only to the big and renowned firms and this is probably what makes the variable size insignificant. Some solid family firms too like Buzzi and Danieli, which are smaller family controlled but established firms, have taken advantage of dual structure. The words of Pietro Buzzi, CEO of Buzzi, also underline the point: " [our saving shares] come from the past. We inherited them from Unicem [an acquired company] and we converted some of them. Then after the merger with Dyckerhoff their amount increased again"(article by Vittorio Carlini (December 2008, il sole 24 ore)). Buzzi is a family firm in which the family holds 56.6 of the voting rights; given this strong control of the family on the company, risparmio shares are very popular and reached in 2008 a level of turnover not very distant from that of the common shares[39]. This is probably due to the fact that such a big stake owned by the family tends to neutralise the impact of the vote of minority shareholders; therefore, it is convenient to take advantage of the patrimonial advantages offered by the saving shares, even if this implies giving up the voting rights, which have *de facto* a limited power in the shareholders' assembly. In the case of Buzzi as well the

[38] RCS mediagroup and Gemina are probably not known to the general public but they are nonetheless established companies. RCS is the editor of the most read Italian newspaper, Gemina is an important industrial holding company active since the sixties.

[39] Buzzi also makes extensive use of non-voting shares. These amount to about 20% of the issued shares. Note, however, that for FIAT and EXOR, this percentage is respectively 6% and 7%.

dual structure was coming from the past but the family decided probably not to abolish this share structure given that it probably does not substantially impact their price performance. One possible explanation is the fact that Buzzi has an established reputation and therefore does not suffer from retaining the dual share structure. Even more interesting, for Danieli in 2008 the turnover of the saving shares was higher than that of the common shares. This is probably due to the limited free float of the common shares, which always possess voting rights.

Table 4

Probit regression – first stage

The following table reports the probit regression related to the first stage of our methodology. In column (1) we see the marginal effects. In column (2) we report the coefficient estimations. In column (3) the probit regression is reconsidered using only the variables that showed significant coefficient in column (2). The stars stand for statistical significance at the 1,5,10% levels: *** p<0.01, ** p<0.05, * p<0.1. The standard errors are reported in parentheses.

VARIABLES	(1) Dual	(2) Dual	(3) Dual
Fam	0.0176	0.556	
	(0.0203)	(0.469)	
Foun	-0.0396	-1.418**	-0.761**
	(0.0302)	(0.613)	(0.369)
Vtagr	0.0212	0.531	
	(0.0241)	(0.405)	
c5	-0.00233	-0.0698*	-0.0584**
	(0.00228)	(0.0376)	(0.0271)
Wstde	-1.01e-05	-0.000303	
	(0.00506)	(0.152)	
Wlnta	-0.000917	-0.0275	
	(0.00764)	(0.231)	
Dipo	-0.000497	-0.0149	
	(0.000471)	(0.00956)	
Fage	0.000476	0.0143**	0.0161***
	(0.000374)	(0.00566)	(0.00347)
Dmed	0.00556	0.145	
	(0.0271)	(0.622)	
Dfas	-0.0117	-0.572	
	(0.0118)	(0.681)	
Wvol	0.000205	0.00616	
	(0.000733)	(0.0216)	
Wde	0.00521	0.156**	0.143***
	(0.00464)	(0.0793)	(0.0481)
Wliq	-0.0545	-1.633	
	(0.0772)	(2.218)	
Wbeta	0.0640	1.920**	2.238***
	(0.0570)	(0.895)	(0.601)
Wvolu	0.0263	0.790**	0.570**
	(0.0221)	(0.399)	(0.234)
Wsale	0.00755	0.226	
	(0.00843)	(0.201)	
Vfloat	-0.00406	-0.122***	-0.0901***
	(0.00339)	(0.0455)	(0.0306)
Comu	-7.28e-07	-2.18e-05	
	(2.14e-06)	(7.14e-05)	
Constant		32.39*	2.640
		(19.39)	(2.645)
Observations	224	224	240

If we give a more accurate view to the result on table 4 we can notice that this point is also confirmed by the variable foun. It is interest to notice that Villalonga and Amit (2004) too get a negative effect of first generation family firms on the probability of having dual structure. The negative sign is related to the fact that if the founder is still active in the firm then the firm is relatively young, that is, this variable is negatively correlated with fage, whose coefficient has in fact a positive sign. As previously clarified, the dual share structure has turned very unpopular in the last two decades. Therefore, the variable found captures, in our opinion, this effect, while the family dummy (fam) is insignificant. This result could seem surprising given also the results of Cronqvist and Nilsson (2003) that find for a sample of Swedish companies that family firms are more likely to use dual share structure. However, as shown in the descriptive statistics, families tend to have a big stake in the firm in order to retain control. In addition, only 16 out of 151 family firms use dual structure. In other words, it could be the case that families want to keep control for monitoring and private benefits incentives but they are not doing that through the use of dual class. Furthermore, according to our previous point about the relation between reputation and the decision to retain dual share structure, the reputation of the family might help to retain this share structure but, of course, not all families have a strong reputation on the market. This is a possible additional reason for the insignificance of the estimated coefficient.

The normalised[40] variable wvolu has a positive coefficient and seems to confirm our analysis. Companies whose shares are frequently traded have a higher probability of having dual structure. This should be consistent with our argument that established and well respected companies, whose shares are therefore frequently traded, can afford to have dual structure.

Regarding the variable wde, we can notice that high leverage firms have a higher probability of having dual structure. Also this variable relates to a certain extent to our point that only established firms tend to use dual structure. To retain control there are two methodologies: increase firm leverage (i.e. sell very few new shares and increase the debt equity ratio) or sell non-voting shares. These two methodologies are complementary: both are used until they equate at the margin. In addition, the sign of the coefficient would be due to the fact that well-established firms having dual class are allowed to have a higher leverage, which is also the reason why they can afford to have dual structure without being penalised in terms of price.

The beta also has a positive coefficient. This means that the higher the systematic risk of the firm is, the more likely it is to have a dual share structure. One possible explanation is that the higher risk implies that the utility cost of retaining control without taking advantage of non-voting shares is higher. This would go in the direction of higher costs related to monitoring power. Alternatively the possibility of exploiting private benefits is higher if the beta is bigger. In fact, as shown by Demsetz and Lehn (1985), when the volatility is high, the cash flows are also more volatile. This implies that in periods of economic upturn in the market the possibility of exploiting private benefits is higher. Given

[40] Given its normalization, the size of the company has no direct effect on this variable. For more details see the second chapter.

that volatility and beta are strongly correlated we could also relate our variable beta to the possibility of exploiting private benefits. Concerning our argument about established firms, it is very difficult to say if they have a high or low beta. Therefore it is difficult to develop the analysis in this case.

Regarding the variable C5, the result of the probit regression is not surprising. In fact, a firm is more likely not to have dual structure if the first 5 shareholders have a big stake in the firm because there is less need of dual share structure to retain control. In other words, dual class is more likely to be used when the probability of losing control is higher. However if C5 is high this risk is not very relevant and therefore there is less need of the dual share structure. In old and established firms it is likely that the C5 is not very high given that the companies are rather big and have probably fragmented their ownership in the many years of quotation.

Regarding our "instruments", it is interesting to notice that the variable Comu does not seem to impact the decision to have dual structure. On the other hand, the other variable that we only place in the first stage is vfloat, which is significant. The negative sign of the estimated coefficient could be rather surprising though. A possible explanation is that the companies deciding to unify their shares (or those deciding not to use dual structure) tend to have a more fragmented public ownership (i.e. a higher voting float) in order to be appealing to (mostly institutional) investors. In fact, regular and institutional investors do not usually buy big stakes in a company. This could be the reason why we get a negative sign in the estimated coefficient. However, there is also an alternative explanation. If the voting float is high then the company has a more dispersed ownership. This implies that the incentive to take advantage of the dual structure is smaller because it will be more difficult to coordinate all the small shareholders to vote in a way that differs from the one suggested by controlling shareholders.

Finally, we would like to discuss some issues related to the fact that our first stage regression contains too many unnecessary or irrelevant variables. Some of the variables that we consider are extremely relevant to explain performance in the second stage. As already said in the model description chapter, our model forces us to use all the variables that we consider in the second stage also in the first stage. However, as a robustness check and to address these remarks, we also run a probit regression dropping those variables that are not significant (at a 10% level) in the first stage. As expected the significance of the remaining variables tends to increase. This model is shown in the third column of table 4. We will discuss this model further and in particular the results in the second stage using the more parsimonious probit in the first stage.

We also run the entire model using the adjusted ROA: the ROA after taking into account the private benefits through SG&A, as explained in the chapter concerning the variables. Unfortunately this dependent variable does not offer us a better understanding of the decision to use dual structure. Therefore we omitted the results related to this measure.

4.4 The second stage

The model does not show robust results across the two measures that we used[41] as dependent variable: wroa and wtq. The difference in results provided by these two measures will drive our interpretation. As already noted in chapter 2, Tobin's Q generates some concerns when used as a "performance" measure *stricto sensu* in our setting. The problem is in the fact that it is based on market prices, which in many cases do not reflect any controlling premium. Let us consider, for example, a company where the founder or its family owns more than 50% of the voting shares; would the Tobin's Q be a good measure of performance in this case? Probably not, because the share price on the market will reflect the impossibility of gaining control of the firm. This issue is especially serious in Italy, where, as showed in the descriptive statistic paragraph, most of the companies are unassailable and therefore their stock price does not incorporate any control premium, which is an essential element if we want to study the overall value creation deriving from the dual share structure. Therefore, the analysis based on Tobins' Q is more suited for understanding the impact of dual share structure on the market price, on which this measure is based; while ROA is probably more suited for a study on the overall performance deriving from the companies using this share structure. It must be said that also ROA is not a perfect measure of performance because it suffers from the usual accrual accounting issues that are often distortive, especially in a cross sectional setting such as ours.

It seems that, using ROA as dependent variable, the decision to have dual class has no impact at all on performance and there seems to be no evidence of self selection as well, assuming that lambda and alphas coefficients (called dual and nndual in table 5) are equal to zero given their insignificance. If the lambdas were significant, given their sign, we could have concluded that the firms self-selected in the treatment/non-treatment group and that only those firms for which dual structure is less value destroying use this share structure to wedge between control and ownership[42]. The reason why they chose this share structure, even if value destroying, could have been related to private benefits and/or to monitoring. However this is not the case given our results: we find no evidence (with ROA) of self selection and no evidence that dual structure impacts performance. It must be said that all the econometric models deriving from Heckmann's two stage method, like ours, tend to have limited power and often show insignificant coefficient for the inverse Mill's ratio.

It is possible to infer from our results that the dual share structure seems to have no impact on ROA and there seems to be no self selection taking place, given that respectively both alphas and lambdas are not significant. On the other hand, the impact of the dual dummy on Tobin's Q is, instead, related to the fact that lambda0 is negative and significant (see table 5, second column). This means that the firm not using dual structure or those who unified their shares are following a conscious maximising decision. Assuming that the insignificance of lambda1 implies that its coefficient is equal to zero and

[41] The results for ADJROA are substantially in line with those obtained with ROA and they are therefore omitted.
[42] This means that, given the sign of the estimated lambda coefficients, we would have been in case 1 described in the chapter concerning the theoretical framework.

given the insignificance of the alphas, we could verify that those firms that do not have this share structure would lose from introducing it (i.e. ATNT<0). If we make the same assumptions, we could also verify that the inverse Mills Ratio term will have a positive effect when we calculate ATT due to the significant and negative lambda0. Indeed, detailed results are provided in table 6 where we report the average value for ATT, ATNT, TB and TBNT across all firms using the values of lambas and alphas that are significant and considering the others equal to zero. It is possible to verify in this table that ATT is positive using Tobin's Q and ATNT is negative. Therefore, firms using this share structure benefit from it on average in terms of Tobin's Q, while those firm that do not have it would be punished by the markets in terms of lower prices, should they introduce it (conceivably especially by institutional investors). In other words, our main finding is that the dual structure does not impact the performance per se, given the results for ROA, but the perception that investors have of it, as showed by the Tobin Q. Therefore, those firms that are not established and well respected and therefore need to make themselves attractive to the capital markets would be punished in terms of price if they were to introduce this capital structure. It is possible to believe, therefore, that the companies taking advantage of dual share structure are only those that are not punished in terms of price by private investors and especially by institutional investors.

Furthermore, for Tobin's Q many of the variables significant in the first stage (probit regression) are significant in the second as well. Therefore, Tobin's Q is influenced mostly by the same variables that impact the decision to have dual structure. Leverage (wde), volume (wvolu) and liquidity (wliq) seem to be especially relevant and present intuitive signs. On the contrary ROA is influenced by different variables. In other words, dual structure is not about performance and consequently about private benefits and monitoring incentives. It seems that wsale and lnta have a relevant impact on ROA even if the estimation provides puzzling opposite signs. It is possible, however, that lnta is a proxy for tangible assets and not for size given that the firm size is probably captured by the variable wsale. It is also interesting to notice that our media dummy has a positive impact on ROA. This result too might come from the intangibility of assets. In fact, media companies tend to have substantial intangible assets. That is, the estimate sign derives from the bias that the ROA denominator is calculated using only tangible assets.

Both our second stage regressions (column (1) and (2) of table 5) seem to provide a good fit, especially in the case of Tobin's Q. It must be said, however, that the R squared in the case of ROA seems to be influenced by the big number of variables that we considered. In fact, we also tried a reduced version of the probit using only the variables that show a significant coefficient at the 10% level. Using this more parsimonious model in the first stage substantially lowers the R square statistic for ROA (see column (3) of table 5). However, for Tobin's Q also the reduced model provides an excellent fit (see column (4) of table 5). This strengthens our idea of a strong relation between the variables related to the decision to retain dual structure and those related to Tobin's Q that implies a relation between dual structure and perception, which impacts in turns the price.

Table 5

Second stage

The sample consists of all the Italian quoted firms in the year 2010 with the exclusion of bankrupt and cooperative companies. The table reports in column (1) and (2) the second stage regressions for the switching regression model with endogenous switching using respectively as dependent variable the ROA and Tobin's Q. In the column (3) and (4) we consider the second stage regression using the only those variables that are significant in the first stage. The variables dual and non dual are called respectively alpha1 and alpha0 in the theoretical framework. Given the heteroscedasticity issue all the regressions show robust errors. The stars stand for statistical significance at the 1,5,10% levels: *** p<0.01, ** p<0.05, * p<0.1. The standard errors are reported in parentheses and are robust.

VARIABLES	(1) Wroa	(2) Wtq	(3) Wroa	(4) Wtq
Dual	-0.483	-1.475	0.0717	0.866***
	(0.514)	(1.307)	(0.0634)	(0.135)
nndual	-0.452	-1.532	0.0679*	0.768***
	(0.522)	(1.328)	(0.0381)	(0.0838)
Fam	2.33e-05	-0.0490		
	(0.0150)	(0.0319)		
Foun	0.00859	0.0627*	-0.00175	0.0564**
	(0.0138)	(0.0359)	(0.0120)	(0.0278)
Vtagr	0.00170	0.00886		
	(0.00965)	(0.0249)		
c5	9.99e-05	0.00161*	0.000237	0.00136
	(0.000379)	(0.000966)	(0.000411)	(0.000877)
wstde	0.000365	0.00274		
	(0.00494)	(0.00939)		
Wlnta	-0.0181***	-0.0239		
	(0.00640)	(0.0153)		
Dipo	0.000286	0.00119*		
	(0.000259)	(0.000670)		
Fage	1.32e-05	-0.000791*	-0.000315	-0.00146***
	(0.000196)	(0.000410)	(0.000218)	(0.000391)
Dmed	0.0406*	-0.0237		
	(0.0228)	(0.0378)		
Dfas	0.00558	0.116**		
	(0.0217)	(0.0526)		
Wvol	-0.00318***	-0.00319**		
	(0.000684)	(0.00139)		
Wde	0.00189	-0.0213***	-0.00615*	-0.0294***
	(0.00297)	(0.00568)	(0.00328)	(0.00522)
Wliq	0.0725*	0.241**		
	(0.0394)	(0.121)		
wbeta	-0.0155	-0.0802	-0.00720	-0.166***
	(0.0246)	(0.0577)	(0.0297)	(0.0558)
wvolu	0.0187	0.0952***	0.00176	0.0747***
	(0.0126)	(0.0224)	(0.0122)	(0.0201)
Wsale	0.0263***	0.0103		
	(0.00409)	(0.0123)		
lambda1	0.0150	-0.00737	-0.00232	-0.0363
	(0.0219)	(0.0407)	(0.0221)	(0.0423)
lambda0	0.00638	-0.151***	0.0125	-0.179**
	(0.0234)	(0.0542)	(0.0384)	(0.0719)
Observations	207	224	221	240
R-squared	0.620	0.961	0.373	0.957

Table 6

ATT, ATNT, TB and TBNT using only significant alphas and lambdas

The table present the results for ATT,ATNT, TB and TBNT. The panel A refers to the estimates generated using the ROA as dependent variable. Panel B shows the same statistics for Tobin's Q. The reported values account for the eventual insignificance of alphas and lambdas coefficients.

Pannel A: analysis of ATT, ATNT, TB and TBNT for ROA

	Obs	Mean	Std. Dev.	Min	Max
ATT	31	0	0	0	0
ATNT	193	0	0	0	0
TB	25	0	0	0	0
TBNT	182	0	0	0	0

Pannel B: analysis of ATT, ATNT, TB and TBNT for Tobins' Q

	Obs	Mean	Std. Dev.	Min	Max
ATT	31	0.11647	0.086927	1.89E-05	0.286337
ATNT	193	-0.01871	0.036824	-0.23223	-2.27E-14
TB	31	0.168291	0.144198	-0.02669	0.475501
TBNT	193	-0.01871	0.162705	-0.5886	0.407415

The reason why ATNT and TBNT are very close is that the difference between the two measures is based on the fact that one uses actual values and the other use expected. The difference between actual and expected tends to zero as the sample increases (we calculate this measure using 193 observations). Indeed, ATT is less close to TB because we have fewer observations.

Concerning columns (3) and (4) of table 5, they refer to the second stage using only those variable that are significant in the first stage. Also for this model the results are not bringing any substantial difference for ROA, if we consider the alpha0 (i.e. nndual) only significant at the 10% or 5% level. However, even if we considered the alpha0 significant, the positive alpha0 (i.e. nndual) would turn the ATT in a positive value, assuming that alpha1 is equal to zero given its insignificance. Concerning Tobin's Q (see column (4) of table 5), the results concerning the more parsimonious probit model are different because compared to the full model both alphas (i.e. dual and nndual) turn significant. However, given that their difference is positive and given the negative sign of lambda0 (as in the full model), we can notice that ATT is also in this case positive. Therefore, our main conclusion seems to hold also with this more parsimonious version of our model: firms using dual share structure benefit in terms of price (i.e. of Tobin's Q) due to this share structure.

3.5 The second stage with two equations

We attempted to verify the robustness of our result using a two regression approach in the second stage, whose trade-off is of course to reduce the precision of our estimation, as explained in the chapter on the model. In other words, we run two separate regressions: one for firms using dual structure and the other for those not using it. As it is possible to notice, for the model using ROA as dependent variable there is, concerning alphas and lambdas estimates, no substantial difference with the results that we found in the previous chapter using a unique regression in the second stage.

Table 7

Two equations in the second stage

The column (1) and (2) show a robustness check using two different equations in the second stage for companies, respectively, without dual share structure and with it. Both equations use ROA as dependent variable.. Column (3) and (4) follow the same methodology but relate to wtq as dependent variable. The stars stand for statistical significance at the 1, 5, 10% levels: *** p<0.01, ** p<0.05, * p<0.1. The standard errors are reported in parentheses and are robust.

VARIABLES	(1) wroa0	(2) wroa1	(3) wtq0	(4) wtq1
Fam	2.86e-05	0.0302	-0.0412	-0.0247
	(0.0146)	(0.0331)	(0.0345)	(0.102)
Foun	0.00996	-0.167**	0.0534	0.115
	(0.0142)	(0.0567)	(0.0334)	(0.205)
Vtagr	0.00317	-0.0175	8.62e-05	0.00910
	(0.0117)	(0.0258)	(0.0273)	(0.0867)
c5	0.000154	-0.000695	0.00169*	0.000488
	(0.000434)	(0.000952)	(0.00100)	(0.00342)
Wstde	0.000171	0.00793	0.00778	-0.0220
	(0.00525)	(0.0112)	(0.0126)	(0.0321)
Wlnta	-0.0191***	-0.0197	-0.0185	-0.00281
	(0.00730)	(0.0175)	(0.0161)	(0.0512)
Dipo	0.000386	7.22e-05	0.00132	0.000659
	(0.000467)	(0.000516)	(0.00107)	(0.00141)
Fage	-6.82e-06	-0.000150	-0.00120*	-2.45e-05
	(0.000292)	(0.000368)	(0.000652)	(0.00105)
Dmed	0.0429**	-8.21e-05	-0.0250	0.0998
	(0.0201)	(0.0344)	(0.0487)	(0.131)
Dfas	0.0112	-0.0682	0.142***	0.119
	(0.0199)	(0.0579)	(0.0480)	(0.183)
Wvol	-0.00314***	-0.00531**	-0.00363**	0.000744
	(0.000673)	(0.00172)	(0.00159)	(0.00464)
Wde	0.00247	0.0144*	-0.0292***	-0.0104
	(0.00372)	(0.00623)	(0.00806)	(0.0159)
Wliq	-0.0737	0.139	-0.267**	-0.0536
	(0.0524)	(0.145)	(0.121)	(0.541)
Wbeta	-0.0175	-0.0508	-0.113*	0.145
	(0.0273)	(0.0893)	(0.0646)	(0.261)
Wvolu	0.0200*	-0.00426	0.0998***	0.0565
	(0.0106)	(0.0148)	(0.0254)	(0.0545)
Wsale	0.0266***	0.0323**	0.00550	0.00509
	(0.00601)	(0.0129)	(0.0135)	(0.0438)
fipsihatratioifd0	0.000919		-0.214***	
	(0.0354)		(0.0772)	
fipsihatratioifd1		0.0258		0.104
		(0.0307)		(0.102)
Constant (alpha)	-0.654	0.0572	-1.774	-0.875
	(0.940)	(1.038)	(2.149)	(2.732)
Observations	182	25	193	31
R-squared	0.380	0.928	0.303	0.364

Regarding Tobin's Q we cannot notice any substantial difference as well. The only significant factor is still lambda0 and its negative estimation is slightly reinforced. We hoped to have more information about the variables that impact Tobin's Q in the regression that considers only dual structure companies (column (4) of table 7). We tought that we could notice if some variables had a particular effect on wtq, having a focus only on those companies having dual share structure. However, the small number of observations available is likely to reduce the significance of the estimations. Therefore, no additional analysis can be developed given that all the variables are insignificant.

5. Conclusion

The long debate in the literature about the impact of dual structure in terms of performance has often favoured a vision of dual structure as value destroying, mostly due to the exploitation of private benefits that this share structure could favour. Our results go in the direction of showing that this is not the case anymore, at least in Italy. In the end, the dual share structure is a very clear way to wedge between ownership and control and should be favoured compared to pyramids and cross-ownerships, which are obscure and less accountable ways to obtain the same result. If it is incorrect to talk about exploitation of non-controlling shareholders, given that the possible exploitation of private benefits is already incorporated in the price of preferred non-voting shares, we find nowadays no clear evidence of value disruption related to the use of dual share structure. Nonetheless, in the Italian sample that we have, which is especially suited for this kind of analysis given its legal framework, there has been no clear sign that neither exploitation of private benefits nor increased efficiency and effectiveness of monitoring is driving the decision to have this share structure, as suggested by a mainstream literature so far. Furthermore, it is possible that the pressure on the price of most companies that use this share structure is causing its extinction. In other words, if the general market perception has been that dual share structure has a negative impact on company performance, a substantial part of the firms using this structure were probably punished in terms of price and for this reason decided to unify their shares (or not to introduce the dual share structure in the first place). This could explain the strong decrease in the use of this share structure that has taken place on the Italian stock market in the last two decades. However, we find that the negative impact on the price is not taking place for a limited group of well established and respected firms, which of course retained this share structure because it was not penalising for them. If a negative effect in terms of value creation existed in the past, it is not possible to say using our study. However, as already said, this effect is not evident nowadays in our sample.

In conclusion, according to our analysis, the dual share structure is a residual share structure that only a few companies can still afford to have due to its negative market perception. However, we do not consider the critics against this capital structure and the resulting legislative intervention justified because it does not seem to have any real impact on performance.

Appendix I

The aim of the appendix is to prove that $ATE = \delta$ if d and Y are conditionally (on X) independent.

Using the law of iterated expectations:

$$ATE = P(d=1)E(Y_1 - Y_0|d=1,X) + P(d=0)E(Y_1 - Y_0|d=0,X)$$

$$ATE = P(d=1)E(Y_1|d=1,X) - P(d=1)E(Y_0|d=1,X) + P(d=0)E(Y_1|d=0,X) - P(d=0)E(Y_0|d=0,X)$$

Considering the conditional independence between treatment and outcome:

$$E(Y_1|d=0,X) = E(Y_1|d=1,X)$$

$$E(Y_0|d=1,X) = E(Y_0|d=0,X)$$

Therefore:

$$ATE = P(d=1)E(Y_1|d=1,X) - P(d=1)E(Y_0|d=0,X) + P(d=0)E(Y_1|d=1,X) - P(d=0)E(Y_0|d=0,X)$$

Finally:

$$ATE = [P(d=1) + P(d=0)]E(Y_1|d=1,X) - [P(d=1) + P(d=0)]E(Y_0|d=0,X) = X'\beta + \delta - X'\beta = \delta$$

This result can be derived using the following relations:

$$E(Y_1|d=1,X) = X'\beta + E(d|d=1,X) + E(\varepsilon|d=1,X) = X'\beta + \delta + E(\varepsilon|d=1,X)$$

$$E(Y_0|d=0,X) = X'\beta + E(d|d=0,X) + E(\varepsilon|d=0,X) = X'\beta + \delta + E(\varepsilon|d=0,X)$$

And remembering that we assume the conditional independence between d and ε:

$$E(\varepsilon|d=1,X) = E(\varepsilon|d=0,X)$$

Appendix II

In this appendix we want to prove that:

$$E(Y_1|X, d=1) = X_1'\beta_1 + E(u_1|d=1) = X_1'\beta_1 + E\big(u_1\big|\xi > -(\gamma_0 + W'\gamma_1)\big)$$
$$= X_1'\beta_1 + \lambda_{\xi 1}\frac{\phi(\gamma_0 + W'\gamma_1)}{\Phi(\gamma_0 + W'\gamma_1)}$$

And

$$E(Y_0|X, d=0) = X_0'\beta_0 + E(u_0|d=0) = X_0'\beta_0 + E\big(u_0\big|\xi < -(\gamma_0 + W'\gamma_1)\big)$$
$$= X_1'\beta_0 - \lambda_{\xi 0}\frac{\phi(\gamma_0 + W'\gamma_1)}{1 - \Phi(\gamma_0 + W'\gamma_1)}$$

The conditional density of u_1 with respect to u_2 is defined as $f(u_1|u_2) = \frac{f(u_1,u_2)}{f(u_2)}$. $E(X|Y)$ is the expectation of X under the conditional probability of X given Y.

A bivariate normal density function has the following form:

$$f\left(u_1,u_2\right) = \frac{1}{2\pi}\frac{1}{\sqrt{1-\rho^2}}\exp\left\{-\frac{1}{2}\left(\frac{u_1^2+u_2^2-2\rho u_1u_2}{1-\rho^2}\right)\right\}$$

Where $u_1 \sim \mathrm{N}(0,1)$, $u_2 \sim \mathrm{N}(0,1)$ are the marginal distributions and ρ is the correlation between u_1 and u_2.

Considering the following standard normal density

$$f\left(u_2\right) = \frac{1}{\sqrt{2\pi}}\exp\left\{-\frac{1}{2}u_2^2\right\}$$

we can now derive the conditional density function:

$$f\left(u_1\middle|u_2\right) = \frac{1}{\sqrt{2\pi}}\frac{1}{\sqrt{1-\rho^2}}\exp\left\{-\frac{1}{2}\left(\frac{\left(u_1-\rho u_2\right)^2}{1-\rho^2}\right)\right\}$$

It is possible to notice that the random variable $u_1|u_2$ is still normal. That is, $u_1\middle|u_2 \sim Normal\left(\rho u_2, 1-\rho^2\right)$

In other words:

$$E\left(u_1\middle|u_2\right) = \rho u_2$$

$$VAR(u_1 | u_2) = 1 - \rho^2$$

Generalizing, if we have two non-standard normal variables $z_1 \sim N(\mu_1, \sigma_1)$ and $z_2 \sim N(\mu_2, \sigma_2)$, with a joint normal bivariate distribution $(z_1, z_2) \sim \text{BivariateN}\ (\mu_1, \mu_2, \sigma_1^2, \sigma_2^2, \rho)$:

$$z_1 = \mu_1 + \sigma_1 u_1$$

$$z_2 = \mu_2 + \sigma_2 u_2$$

He conditional expectation can be written as:

$$E(z_1 | z_2) = \mu_1 + \sigma_1 E(u_1 | z_2) = \mu_1 + \rho\sigma_1 \left(\frac{z_2 - \mu_2}{\sigma_2} \right) = \mu_1 + \rho \frac{\sigma_1}{\sigma_2} (z_2 - \mu_2) = \mu_1 + \frac{\sigma_{12}}{\sigma_2^2} (z_2 - \mu_2)$$

This proves that the conditional expectation of two variables with bivariate (not necessarily standard) normal distribution is a linear function.

It is now useful to analyze another property of the normal distribution. For any distribution, we have:

$$f\ (u | u \rangle c) = \frac{f(u)}{P(u \rangle c)} = \frac{f\ (u)}{1 - F\ (c)} \qquad \text{(III.1)}$$

where c is a real number.

If we have a generic standard normal $u \sim N(0,1)$ then, using the property in equation (III.1) we can write:

$$E(u | u \rangle c) = \int_c^\infty u\ f\ (u | u \rangle c) du = \frac{1}{1 - \Phi(c)} \int_c^\infty u \varphi(u) du = \frac{\varphi(c)}{1 - \Phi(c)}$$

Where φ is the density function and Φ the distribution function of a standard normal.

The last equation is true because:

$$\varphi'(u) = \frac{d}{du} \left(\frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}u^2} \right) = -u\varphi(u)$$

And, consequently:

$$\int_c^\infty u\phi(u) du = -\varphi(\infty) - (-\varphi(c)) = \varphi(c)$$

Given the properties previously shown, it is now clear why the conditional expectation of a bivariate normal $(u_1, u_2) \sim \text{BivariateN}$ with marginal distributions $u_1 \sim N(0, \sigma_1)$ and $u_2 \sim N(0,1)$ and covariance matrix of the form $\Sigma_{u_1 u_2} = \begin{pmatrix} \sigma_1^2 & \rho\sigma_1 \\ \rho\sigma_1 & 1 \end{pmatrix}$ can be written as:

$$E(u_1 | u_2 > -c) = \int_{-c}^{+\infty} E(u_1 | u_2 = \alpha) \frac{\varphi_{u_2}(\alpha)}{1 - \Phi_{u_2}(-c)} d\alpha = \frac{\rho\sigma_1}{1 - \Phi_{u_2}(-c)} \int_{-c}^{+\infty} \alpha \varphi_{u_2}(\alpha) d\alpha$$

$$= \frac{\rho\sigma_1}{1 - \Phi_{u_2}(-c)} \int_{-c}^{+\infty} \varphi_{u_2}(\alpha) d\frac{\alpha^2}{2} = \frac{\rho\sigma_1}{1 - \Phi_{u_2}(-c)} \int_{-c}^{+\infty} \frac{1}{\sqrt{2\pi}} e^{-\frac{\alpha^2}{2}} d\frac{\alpha^2}{2}$$

$$= -\frac{\rho\sigma_1}{1 - \Phi_{u_2}(-c)} \frac{1}{\sqrt{2\pi}} e^{-\frac{\alpha^2}{2}} \Big|_{-c}^{+\infty} = \frac{\rho\sigma_1}{\Phi_{u_2}(c)} \frac{1}{\sqrt{2\pi}} e^{-c^2/2} = \frac{\sigma_1 \rho \, \varphi_{u_2}(c)}{\Phi_{u_2}(c)}$$

This proves exactly equations (1.3) given that in our model the variable u_2 is defined as ξ, the variable u_1 is defined as u_1 (or u_0) and the point c is the value $\gamma_0 + W_i' \gamma_1$. In fact, substituting, we find:

$$E(Y_1 | X, d = 1) = X'\beta_1 + E(u_1 | d = 1) = X'\beta_1 + E(u_1 | \xi > -(\gamma_0 + W_i' \gamma_1)) =$$

$$= X'\beta_1 + \rho_1\sigma_1 \frac{\varphi_\xi(\gamma_0 + W_i' \gamma_1)}{\Phi_\xi(\gamma_0 + W_i' \gamma_1)}$$

A similar procedure can be followed to find $E(Y_1 | X, d = 0)$.

$$E(u_1 | u_2 < -c) = \int_{-\infty}^{-c} E(u_1 | u_2 = \alpha) \frac{\varphi_{u_2}(\alpha)}{1 - \Phi_{u_2}(-c)} d\alpha = \frac{\rho\sigma_1}{1 - \Phi_{u_2}(-c)} \int_{-\infty}^{-c} \alpha \varphi_{u_2}(\alpha) d\alpha$$

$$= \frac{\rho\sigma_1}{1 - \Phi_{u_2}(-c)} \int_{-\infty}^{-c} \varphi_{u_2}(\alpha) d\frac{\alpha^2}{2} = \frac{\rho\sigma_1}{1 - \Phi_{u_2}(-c)} \int_{-\infty}^{-c} \frac{1}{\sqrt{2\pi}} e^{-\frac{\alpha^2}{2}} d\frac{\alpha^2}{2}$$

$$= -\frac{\rho\sigma_1}{1 - \Phi_{u_2}(c)} \frac{1}{\sqrt{2\pi}} e^{-c^2/2} = -\frac{\sigma_1 \rho \, \varphi_{u_2}(c)}{1 - \Phi_{u_2}(c)}$$

Consequently:

$$E(Y_0 | X, d = 0) = X'\beta_0 + E(u_0 | d = 0) = X'\beta_0 + E(u_0 | \xi < -(\gamma_0 + W_i' \gamma_1)) =$$

$$= X'\beta_0 - \rho_0\sigma_0 \frac{\varphi_\xi\left(\gamma_0 + W_i'\gamma_1\right)}{1-\Phi_\xi\left(\gamma_0 + W_i'\gamma_1\right)}$$

In order to find $E\left(Y_0 \middle| X, d=1\right)$, which we need for the evaluation of Total Benefit, we follow always the same procedure:

$$E\left(Y_0 \middle| X, d=1\right) = X'\beta_0 + E\left(u_0 \middle| d=1\right) = X'\beta_0 + E\left(u_0 \middle| \xi > -\left(\gamma_0 + W_i'\gamma_1\right)\right) =$$

$$= X'\beta_0 + \rho_0\sigma_0 \frac{\varphi_\xi\left(\gamma_0 + W_i'\gamma_1\right)}{\Phi_\xi\left(\gamma_0 + W_i'\gamma_1\right)}$$

Finally, $E\left(Y_1 \middle| X, d=0\right)$ is:

$$E\left(Y_1 \middle| X, d=0\right) = X'\beta_1 + E\left(u_1 \middle| d=0\right) = X'\beta_1 + E\left(u_1 \middle| \xi < -\left(\gamma_0 + W_i'\gamma_1\right)\right) =$$

$$= X'\beta_1 - \rho_1\sigma_1 \frac{\varphi_\xi\left(\gamma_0 + W_i'\gamma_1\right)}{1-\Phi_\xi\left(\gamma_0 + W_i'\gamma_1\right)}$$

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The Bankruptcy of Parmalat: Story, Mechanics and Analysis of the Fraud

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Abstract

The paper gives an overview of the bankruptcy of Parmalat. It is aimed at explaining what mechanisms were set up in order to make this fraud possible. This essay also tries to delve into the role of all stakeholders (banks, auditors, institutional investors etc.). Thanks to some accounting tricks, which are described in detail, and political ties, the founder of the firm was able to get substantial amounts of financing and to generate a hole of about €14bn. In order to provide a bigger picture on the causes of the fraud, I also tried to put Parmalat's case in the greater framework of Italian capitalism and to underline the damages produced in this story by "relational capitalism". The role of investment banks and accounting firms is also described. Finally, I present a short summary of the main lessons that financial analysts should learn from Parmalat, focusing especially on the alarm bells that should be considered to identify fraud in advance.

JEL-code: G33, G34, M40

Keywords: Parmalat, Bankruptcy, Fraud

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1. Introduction

Parmalat is one of the biggest frauds that have ever taken place on the world stock markets. According to the PWC review that was requested by Mr. Bondi, the turnaround specialist taking control of Parmalat after the bankruptcy, the real debt and debenture loans consisted of about €13.2bn. The figure is huge if we compare it with the 6.039bn that are reported in the third quarter of 2003 (before the fraud came to light) under the total bank debt and debenture loan account. Most of the cash and equivalents reported in the financial report were nonexistent. The fact that the top management was able to cheat the financial world community (most of the debenture loans were issued abroad and were aimed at institutional investors) for almost 14 years raises the interesting question of how this was made possible. This essay tries to give an answer to this question. Furthermore, I delve into the controversial role of the banks, accounting firms and regulators: is it possible that some institutions were at best reticent to investigate the peculiarities of Parmalat's accounting due to the political ties of Mr. Tanzi or to the economic interest that a business relation with the company generated? The paper also analyses in detail, within the historical framework, the possible alarm bells that did not ring.

An additional point that will be considered is the mechanics of the fraud from an accounting and financial point of view. As we will see, most of the technical aspects related to the fraud are not extremely complex: for example, most of fake liquidity was generated by Mr. Tanzi, the founder, and Mr. Tonna, Tanzi's right hand and CFO, with a scanner and a computer.

Finally, a complementary aim of this paper is to relate the case of Parmalat with a certain forms of what prof. Zingales defines as "relational capitalism" that have caused so many problems for Italy. This, of course, does not mean that there are not some positive aspects related to the network of tight business relations that take place in Italy. However, I will focus mostly on its pathological aspects: the possibility of having access to bank credit just on the base of political connection is a problem that affects many countries. However, what is different in Italy is the extent to which incapable managers were guaranteed credit over years. It must be said that the privatization and consolidation of banking sector greatly reduced this phenomenon.

As stated by Mr. Bondi, the financial distress was caused by three main elements (see Exhibit 1 and its detailed explanations on page 14):

- The many unprofitable acquisitions of companies with low margins
- The big amounts of money misappropriated by Mr. Tanzi and his closest collaborators
- The financing operations that with time became bigger, more complex and more expensive aiming at hiding the insolvency situation of the company.

In conclusion, Parmalat was not a bad company after all given that Mr. Bondi was able to turn it

around and make it profitable in a few years. The main problem was related to the fact that Mr. Tanzi excessively increased the leverage above the limit that his company was able to bear and that he wanted to manage a multinational as a local firm. Especially in an Italian framework, this risk is common to many firms that are born as family firms and later fail to acquire a more managerial perspective.

Despite my efforts to find detailed information, some points remain rather obscure. Given that I do not have access to many documents and to the people involved in the scandal, I had to make reasonable assumptions and it was sometime the case that I could not clarify every aspect. Of course, the reader is alerted when this is the case.

This paper contributes to the general discussion on Parmalat mainly in two ways. The actual literature on the topic is either extremely technical on small specific issues or aimed at the general public and very generic. To the best of my knowledge, there exists no paper clarifying in a clear manner the entire Parmalat history in detail and being at the same time technically advanced and precise. Furthermore, I have noticed in some news aimed at the general public (newspapers, books, etc.) a level of approximation that sometimes almost turns into inexact reporting. I tried to disentangle the noise produced by these reports, in order to analyze and understand the real dynamic of the facts. Secondly, there exists no paper reporting what financial analysts should learn from this story. In a sense this is the most important point because it helps practitioners to understand and avoid making in the future the mistakes of the past. Given my strong belief in the controlling role exercised by institutional investors, I believe that they, in particular, could greatly profit from understanding what happened in the case of Parmalat.

The paper is organized as follows. In chapter 2 the story of Parmalat is described and some details of the fraud are reported. Most details concerning the fraud are also given in this part because they help us understand the flow of events. In chapter 3, I analyse the behaviour of the banks and of the auditors and I try to provide some evidence that at least some of them were probably aware of the real financial situation of the company. In chapter 4, I give a better insight on the framework within which Parmalat operated: a short view on the corporate governance issues and the Italian legal setting. Furthermore, in this chapter I analyse the role of external public controlling institutions (Bank of Italy and CONSOB). Chapter 5 consists of a summary of the possible lessons that could be learnt from the Parmalat story and that could help analysts to focus on the right questions to identify a fraud in advance in the future. Finally, chapter 6 consists of a short epilogue describing Mr. Bondi's turnaround. A conclusion follows.

2. The history of the company

2.1 The innovative beginning

In 1958 Callisto Tanzi inherited a small company founded by his grandfather, whose business consisted of distributing the famous local ham and canned food in the area around Parma. The company was very small and it did not operate at the national level: sales consisted only of 200mn liras (€103291[1]). When Mr. Tanzi took control of the firm he was 22 and had been forced to abandon his college studies in order to take care of the family business due to the premature death of his father. The first phase of his management was very innovative. He changed the name of the company into Dietalat in 1962 (and then into Parmalat in 1968). The idea was to have a more alluring brand recalling the idea of natural, local and healthy milk, which was the product that Mr. Tanzi elected to diversify his business into. However, the big innovation took place in 1963. Fresh milk suffers from a limited and short consumption span due to the bacteria it contains. Bringing the milk at ultra-high temperature (UTH) very quickly allows killing the bacteria without altering the nutritional characteristic of the product. This process results in the fact that milk can be stored for months. In addition, during a trip to Sweden Mr. Tanzi learned of Tetrapack packages, which were much more suited to contain milk than the traditional glass bottle used at the time. The combination of these two innovations made possible a sudden jump in profits and the generation of a new segment in the market. Of course, margins declined with time due to competition and this is one element that probably caused a rather lower operating performance in the late seventies and eighties. The innovations brought up by Mr. Tanzi did not end at this stage. He started in the seventies a strong advertisement campaign using especially winning athletes mostly in skiing and racing[2] in order to generate the idea that Parmalat milk has a young, healthy and winning profile. This systematic approach to sponsoring athletes was innovative and had an impact on sales in the seventies. The mind behind this marketing strategy was Mr. Barilli. This strategy was continued in the 80s but its impact on sales then is likely to be more debatable.

Another event that allowed Parmalat to grow substantially between 1973 and 1974 was the liberalization of the fresh milk market, which was monopolized by the public local milk companies. In order to disentangle the strong monopolistic power of these companies, which continued some time after the change in the legislation, Parmalat had developed a strong distribution channel, which in 1977 was able to reach 80000 retail shops and in 1985 110000.

Next to an aggressive growth Mr. Tanzi also took care of supporting the Catholic Church and its reference party, the Christian Democratic (*Democrazia Cristiana)*, which at the time was the main

[1] In 1999 the official exchange rate was set at 1936.27 liras for each euro.
[2] For example, Parmalat sponsored former champions Nikki Lauda, Pierino Gross, Gustav Thoeni, Riccardo Patrese and Nelson Piquet among others.

Italian party. It was well known that the helicopters of the company were frequently used by high ranking priests. In addition, he financially supported a number of charities, as for example, a drug rehabilitation center run by the Catholic Church or the construction of apartments for single mothers. He also allowed for the distribution of Parmalat products to homeless people.

2.2 Increasing the pace of growth: the 80s

This chapter is organized in two parts. The 2.2.1 subchapter concerns the historical aspects, while subchapter 2.2.2 is focused on the accounting related issues and on technical aspects. It was convenient to unify both aspects in a single chapter because both are necessary for understanding the flow of events in the following decades.

2.2.1 An historical overview on the 80s

If allegedly the 80s seem to have been a period of quick expansion (even stronger than the 70s), the truth is most likely that this growth was based on the increase in borrowing, which was obtained thanks to the political ties of Mr. Tanzi, and on the consequent accounting tricks. In other words, the growth was not based on the cash flows generated by the business, which on the contrary were likely to decrease at the time. Just to give a feeling for the figures, in 1979 out of 262bn liras sales the profit consisted of 2.6bn liras but in 1984 the net income margin consisted of the 0.6% (on sales of 550bn liras)[3], an amount that was probably not even sufficient to repay the interest on the existing debt[4]. The limited profitability of milk and related products due to increasing competition, the strong unrelated diversification and the effects of Chernobil nuclear explosion on demand started to generate strong financial tensions in the company during the 80s. For example, the acquisition of Mr Day brand did not produce the expected revenues despite strong advertising costs. The financing, however, was granted by the political connection that the manager had always cultivated: Mr. Tanzi was very close to Ciriaco de Mita, who was the head of the Christian Democratic Party between 1982 and 1989. The relevance, also in economic terms, of this political tie can be understood from the fact that Mr. Tanzi opened a factory in Nusco, the village where Mr. de Mita was born and the area were his electorate was consequently strongest. Even considering that Parmalat benefitted from public incentives that were granted to the area after a devastating earthquake, it is interesting to consider that the closest highway was 40 Km away from the factory. However, the most expensive adventure of Mr. Tanzi was definitely to be related with his desire to establish a media empire. Parmalat bought Odeon TV in 1987. This business adventure of Mr. Tanzi cost Parmalat in terms of overall cash outflows about 270bn liras according to Mrs. Chiaruttini[5]'s estimation. The channel was an attempt

[3] Data provided by Malagutti (2004), p76-77

[4] No balance sheet was published at the time because the company was not yet quoted. Therefore the data should be considered *cum grano salis* (i.e. it might not be extremely precise).

[5] She is the expert witness who was selected by the judges for identifying the misrepresentations in the financial reports of Parmalat.

by the Christian Democratic Party to balance the media power of Mr. Berlusconi, who was supporting the Socialist Party led by Mr. Craxi and had clearly refused to sell one of his channels to Mr. Tanzi as requested by the Christian Democrats. The Socialist Party was in fact increasing its political power (and voters) and Mr. de Mita belonged to the political stream inside the Christian Democrats that did not want any agreement with the new emerging party (while Mr. Andreotti and Mr. Forlani, both among the most influential members of the party and future prime ministers, considered this agreement inevitable). Odeon TV turned into a terrible business for Parmalat and the losses reached 3bn liras per month. It was eventually sold in 1989. This terrible investment would be of limited relevance for our analysis if it had not been related to the first signals of a mixture between Parmalat and Mr. Tanzi's personal businesses. The information about this transaction is not consistent across different sources; however, some aspects seem clear. Parmalat sells Odeon TV to Sata, a limited liability company owned by the Tanzi family (i.e. Callisto, Annamaria, his sister, and Giovanni Tanzi, his brother). The reason of this transaction is clarified later in chapter 2.2.2. In turn, Sata sells Odeon to Norfinco owned by Mr. Fiorini. Some of the debts of Odeon were guaranted by Parmalat and, when Sasea, which owned Norfinco, went bankrupt, Parmalat was forced to pay. According to Bonini and D'avanzo (2004) who reported an interview to Mr Fiorini, some banks exposed to Parmalat offered him about 20bn liras as financing in order to convince him to buy the company and avoid any impairment of the banks' assets related to Parmalat.

In 1988 the brand was very strong but rumors that the company financial conditions were deteriorating spread through the business community. This is probably the reason why Mr. Tanzi received an offer to acquire the company for 730bl liras from Kraft. However, some covenants[6] were introduced in the contract with the likely effect of a payment of only 250bn liras for the acquisition. An eventual change in the ownership of the company would have meant for many politicians the end of privileges and support for friends (and voters). Surely they could not get from a multinational corporation what they got from Mr. Tanzi. It was likely therefore that the active intervention of many of "Tanzi's friends", in exchange for the decision not to sell the company, allowed him to be granted from a pool of banks in 1989 a three year loan that amounted to 120bl liras. Malagutti (2004) reconstructs the source of most of these funds. Parmalat got 20bn liras from Banco di Napoli whose CEO was Mr. Ventriglia who had strong ties with the Christian Democratic party[7], 20bn from the Cassa di Risparmio di Roma whose president was Mr. Capaldo, who was a member of the board of

[6] Given the private negotiation of the deal, the covenants were not disclosed. It is likely, however, that they were related to the correct valuation of assets and liabilities.

[7] Interestingly, Banco di Napoli went bankrupt and was bought by Intesa San Paolo. One of the main reasons has to be related to the non performing loans granted by the bank, which was used to lend money considering as main landing criterion the borrower's political ties. Banco di Roma, one of the main lenders of Parmlat, was also bought by Unicredit before bankruptcy (but after a restructuring managed by Mr. Arpe). According to some rumours, the entire management of the bank was fired after the acquisition. Banco di Roma had always been considered among the Italian banks as the closest to the needs of politicians, probably due to the location of its headquarters in Rome.

Banco di Napoli in the 80s and was born in the same area of De Mita. 20bn came from Istituto San Paolo, whose president was Mr. Zandano, who had ties with Mr. De Mita as well. 5bn from Cassa di Risparmio di Parma, a local bank, whose president was Mr. Silingardi, who had been a high school friend of Mr. Tanzi's and one of the professional accountants employed at Parmalat (see Exhibit 2). He joined the board of director of Parmalat between 2001 and 2003 as non-executive director. 40bn were provided by Monte dei Paschi di Siena probably thanks to the intervention of Mr. Carlo Zini, who was a Christian democrat close to Mr. Andreotti's political stream and introduced Mr. Tanzi to Mr. Gennari (whose company was later used to make the reverse takeover needed for the listing on the stock exchange).

The fresh injection of debt allowed Mr. Tanzi to plan the listing of his company, which happened through a reverse takeover (see subchapter 2.2.2 for details about this operation). The capital markets allowed him to collect much more money, to decrease the company dependence on the banks for financing and to retain control through a pyramidal structure.

2.2.2 Accounting and technical issues in the 80s

The reason why Parmalat had sold Odeon TV to Sata, which in turns sold it to Sasea, is not entirely clear. However, it is reasonable to speculate that this operation was aimed at hiding the losses incurred by Parmalat due to the TV business. In fact, Sata did not pay the acquisition in cash but it sold Parmalat a 99,9% stake in BONLAT srl valued 50bn liras; 76,09% of Dietalat Srl valued 78bn milioni; 2,65% di Parmalat Paestum Spa valued 0.6 bn and 49% della Boschi Luigi e Figli Spa valued 30bn. According to Monti (2011), the valuation of the ceded companied was done by Mr. Penca and Mr. Calogero, the two Grand Thorton auditors that certified Parmalat balance sheet since its quotation and later certified Bonlat balance sheet when the auditor became Deloitte. According to the PWC report (as reported by Bonini and D'avanzo(2004)), the companies were overvalued. The total amount of about 160bn liras corresponded of course to the Odeon TV assets as reported in Parmalat balance sheet. This allowed Parmalat not to write a capital loss in the income statement, despite the big liabilities accumulated on the TV business. I do not have elements to directly challenge the valuation of Mr. Penca and Mr. Calogero due to the lack of data on the operation; however, it must be said that the same auditors were also responsible for the certification of Bonlat, the company that owned a fake €3.9bn account at Bank of America.

Concerning the listing, Parmalat was not quoted directly on the Milan stock exchange but a complex reverse takeover was implemented. Given that there is not much disclosed data on the partially private operation and most of the information derives from the testimony of Parmalat's managers, some details could be missing. However, I substantially follow the reconstruction made by Mrs. Chiaruttini, which is reasonable and is supported by all the public sources that I have found.

In November 1989 Mr. Tanzi[8] sold 20% of Parmalat shares for 89bn liras to Finanziaria Centro Nord (FCN), a listed company owned by Mr. Gennari, who was a businessman close to the Christian democrats. Concurrently, he injected 25/30bn liras into Coloniale, the family holding (see Exhibit 4). With the money invested by Mr. Tanzi (i.e. 25/30bn), Coloniale bought 51.22% of FCN (according to Tonna's testimony). At the same time FCN stipulates with Coloniale a call option on 35.4% of Parmalat shares at a strike of 283.2 bn. The second phase (April 1990-October 1990) of the complex operation started with a 300bn capital increase implemented by Parmalat. Concurrently, FCN makes two sequential capital increases: the first taking place on the 10th of April consisted of issuing 25.813bn worth of shares and was subscribed by the Coloniale and Agis (see Exhibit 4) allowing them to reach an 80% stake in FCN. This operation was aimed at acquiring an absolute majority of FCN before the following capital increase, so that the family could retain its control. Then, on the 2nd of May a second capital increase consisting of 583.535bn took place. It was subscribed for 293.535bn by Coloniale and for 290bn by the market. Concurrently FNC exercised the call option and it received 35.4% of Parmalat shares for 283.2bn. In other words, Coloniale substantially paid its share of FCN capital increase with 35.4% of Parmalat shares. Lastly, FNC pays 286.2bn to subscribe 95.4% of Parmalat 300bn capital increase. The amount remaining (14.1bn) from the FCN capital increase is used for two purposes: first, for the operative needs of FCN (8.1bn) and secondly 6bn were given to Parmalat for the right to acquire, during the milk company capital increase, a percentage of shares higher than the owned stake (95.4% of the newly issued shares instead of 51.22%). With these operations FCN reached a 70% stake in Parmalat. Finally, in October 1990, FCN is renamed Parmalat Finanziaria.

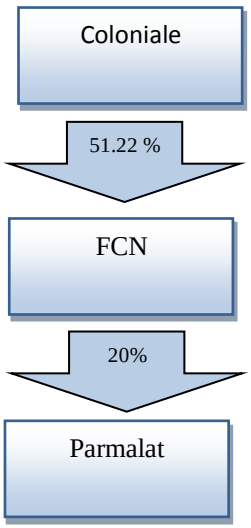

Figure 1: First phase

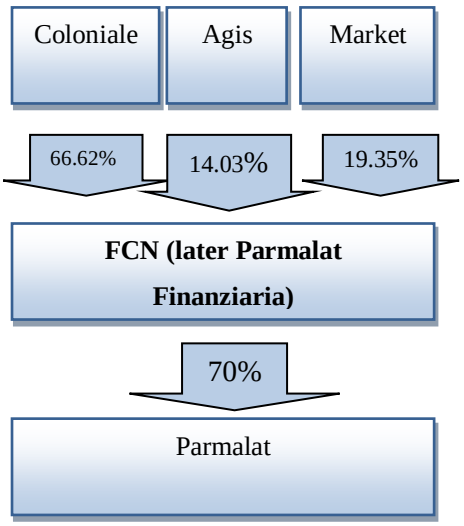

Figure 2: Second phase

The operation was very successful because it reached two main goals. Firstly, a pyramidal structure, which allowed accommodating some future financing needs of the family, was set up. In fact, it was possible to sell some of the shares owned by Coloniale or Agis without losing control of Parmalat. Secondly, Parmalat was recapitalised with the money coming from the market. The Tanzi family

[8] I could not find out if he sold the Parmalat shares owned by Coloniale or some shares that he owns through his own personal holding (like Agis, for example). This point however is not very relevant for understanding the reverse takeover operation.

invested very little or no cash in the operation but the company obtained enough money to continue its growth.

The need for a reverse takeover was justified to the market with the fact that listing on the Italian stock exchange would have required about two years and that Parmalat quickly needed some financing to support its expansion. The truth is probably that this financial operation allowed for setting up a pyramidal structure of control and for limited disclosure. Full disclosure could have been dangerous given that the financial reports were probably already not correctly representing the company's performance and its financial position.

2.3. The 90s

As already done in the previous chapter, an historical overview of the events can be found in the subchapter 2.3.1; while more technical and accounting issues are discussed in the subchapter 2.3.2.

2.3.1 An Historical overview of the 90s

The money injection and the possibility to issue bonds on the international stock markets gave Mr. Tanzi the possibility to start a strong and long acquisition campaign. The primary reason for this strategy was probably related to the fast expansion that more credits granted on the basis of increasing revenues: according to Mr. Malagutti (2004), from 1991 to 1994 the revenues increased from 1326bn to 3608bn liras. The acquisition wave started with Giglio, a rather big Italian milk company, which was on the brink of bankruptcy, in 1993. After this move Mr. Tanzi had to start searching for new opportunities abroad. In fact, when Parmalat bought 10% of Granarolo, another national milk producer, to consolidate a "strategic agreement", the antitrust authorities intervened and forbade the operation signaling that Parmalat could not grow larger on the domestic market. Therefore, Mr. Tanzi decided to start an acquisition campaign in South and North America. According to Malagutti (2004) the revenues in South America exploded from 200bn liras in 1991 to 1120bn liras in 1994. During his testimony, Mr. Tonna said that the South American branches had never given good results, apart from Venezuela after 1999, and that many balance sheet adjustments were necessary in order to make the situation less evident at a consolidated level. He also clarified that these adjustments consisted in selling over valuated brands between subsidiaries of the group or in fake contributions from Bonlat. I will analyze these frauds in more detail in the following subchapter. Expansion in that area proved also to be value destroying if the strong economic crisis and devaluations affecting South American countries in 1998 are considered. North America proved to be an even riskier expansion strategy. In fact, US Americans do not consume UTH milk and they are not used to Tetrapack. In addition, heavy investments were required to increase the recognition and allure of the brands (estimated to be around 25bn liras just for the launching phase 1993-1994). However sales never took off and in 1994 the US revenues amounted to 110bn liras. Tonna depicted

the acquisition of MA Holding (owning the brands Mother's and Archway) as a "wrong operation". In Canada the acquisitions was also aggressive. The companies that Parmalat bought in Canada had big sales but limited profits. In fact, in the milk business was suffering a worldwide effect of competition on margins.

While on the strategic level Mr. Tanzi focused on expansion without a correct approach to consolidation of the acquired companies, at the personal level he got involved in two new businesses which both proved to be disastrous and expensive: football and tourism. As commonly said in the business community, in Italy successful managers need three important elements: a quoted company, a football team and a seat in the board of one of the most powerful banks (preferably Mediobanca). The ownership of a winning football team brings fame and power and it should not be underestimated. That is probably the reason why Mr. Tanzi bought in 1990 the *Parma* football club and turned it into a successful and winning team. Unfortunately the number of supporters was limited given the size of the city and the company was losing a big amount of money especially due to the enrolment of world renowned football talents. According to Stefano Tanzi, son of the Parmalat founder and president of the football team, in the period 2001-2003, when all the talents were sold in order to cash in, Parmalat had to finance the football club for €80mn. It seems that also the football players' appreciation and the selling of the playing rights between subsidiaries of the group helped to alter Parmalat balance sheet. However, I could not find any detailed information on that point. The other terrible business in which Mr. Tanzi got involved was the travel business. In 1990 Tanzi founded ITC&P and started together with the cousin, who had some experience in the field, to buy many touristic companies in order to increase the sales of the group; a strategy that closely recalls the one used with Parmalat. The company changed name to Club Vacanze in 1995, after Mr. Tanzi broke up with his cousin, and in 1998 to Hit (Holding Italiana Turismo). However, the strategy remained the same: a strong acquisition campaign financed by debt aimed at boosting revenues accompanied with very low operating margins. In addition, the choice of the people managing Hit seems to have been based more on personal relations than on managerial skills: for example, Mrs. Francesca Tanzi (Mr. Tanzi's daughter), who has a degree in geology, became one of the key managers. As clarified by Mr. Tonna in his testimony, in order to help Tanzi's personal companies, Hit in particular, Parmalat money were misappropriated with the following methodology: the credit that Parmalat had towards Hit was moved to its offshore subsidiary (Zilpa and Curcastle Corporation). Then it is turned into fake cash on the Bank of America account, as if Tanzi's firm had paid its debt. More details on the mechanics are given in the subchapter 3.2.3. According to the PWC review requested by Mr. Bondi, €263ml were transferred from Parmalat to Hit between 1997 and 2003 and, according to Tonna's testimony, the flow of money presumably borrowed from Parmalat by Tanzi's companies amounted to 500bn liras before 1999.

In 1996 there was a capital increase and Mr. Tanzi received 200bn from UBS on the current account of Coloniale in order to subscribe his share and to avoid diluting his stake. In 1998, however, the funding started probably to be tight and Mr. Tanzi started thinking about the issuance of *risparmio* shares on the Italian stock exchange[9]. For these shares the voting rights are neutralized and they would have allowed him to retain control without having to inject more capital. However, there was very little interest on the part of inverstors and naturally Parmalat decided not to go ahead with the issuance. The reason is probably due to the fact that Parmalat paid in his history very little dividends. However, it is also possible that the market believed that some exploitation of private benefits was possible and therefore investors were not willing to subscribe at the price being offered. Parmalat was able, however, to issue preferred shares having sterilized their voting rights. Between 1997 and 1999 Parmalat Capital Finance, a subsidiary located in Malta, issued with the guarantee of Parmalat preferred shares A, B, C, D, which were all listed on the Luxemburg stock exchange. All classes were underwritten by Merrill Lynch, with the exception of A class, for which a syndication of Merrill Lynch, Credito Italiano and Cariplo was set up. The main difference among the share classes consisted in the currency: A class were issued in liras (150bn as first issuance plus 50bn as second issuance, value netted of transaction costs), B in dollars (100ml, value netted of transaction costs), C in pounds (100ml, value netted of transaction costs) and D in ECU[10] (125ml, value netted of transaction costs). In addition, all classes offered a cumulative dividend of LIBOR+2.5% except from C class, which offered a fixed rate of 9.375%. A difference also existed in the payment of the dividends: quarterly for A, B and D classes and annual for C class. In addition, the C class shares were also differentiated by the fact that they were not callable by the issuer but only by the owner at predetermined dates.

It is also interesting to notice that in the 90s Parmalat financing strategy moved from the bank credit to internationally issued bonds. This is probably due to the privatization of the main Italian banks and to the "clean hands" enquiry that wiped out most of Mr. Tanzi's political relations. It is also possible to suppose that Italian banks understood better the financial situation and for this reason they were hesitant to increase their borrowing to Parmalat.

2.3.2 Accounting and technical issues in the 90s

The 90s saw an increase in siphoning from Parmalat in favor of Mr. Tanzi's offshore companies. The mechanics are mostly inferred from the testimony of Parmalat managers. I could not clarify all details and some points are still not entirely clear from an accounting point of view. However, it is clear that the misappropriation of Parmalat money started in the 80s and increased monotonically in the 90s. In a first phase, the mechanics followed a clear path: Tanzi's offshore companies borrowed some money from Parmalat. The credit written in the financial reports by Parmalat was shifted in favor of

[9] These are preferred shares that by law do not allow to vote in exchange for some patrimonial advantages defined in the company articles of association (higher or cumulative dividend, most of the times).
[10] European Currency Unit.

its offshore companies; mostly Zilpa and Curcastle[11] (see Exhibit 3). The reason for this transfer probably stood in the fact that it was easier to generate a fake compensating credit in an offshore company whose balance sheet is more difficult to access. In fact, the credits written in the Parmalat offshore company balance sheet were cancelled out by fake debts to Tanzi's offshore companies (i.e. a nonexistent claim of Tanzi's offshore companies was made up in the balance sheets of Parmalat off-shore subsidiaries). However, in a second phase (it seems around the nineties), a little change in the main siphoning scheme took place: the debt of Tanzi's personal companies to Parmalat offshore companies were allegedly paid up in cash on the bank of America account owned by Bonlat (see Exhibit 3), an offshore company belonging to Parmalat. At a consolidated level this mechanism allowed the managers to hide the siphoning.In fact, in reality the account, on which €3.9bn (in 2003) were supposed to be deposited, was fake! It was generated by Mr. Tanzi, Mr. Tonna, the CFO, and Mr. Bocchi, a Parmalat accountant, with a scanner and a Computer. Parmalat management, in fact, probably considered the generation of fake liquidity more appropriate than fake compensations among off-shore companies due to two reasons: firstly and most important, it was better to boost liquidity on the balance sheet given the strong borrowing needs of the company, and secondly, offsetting big amounts could have eventually generated suspicions of money misappropriation. According to the PWC review, requested by Mr. Bondi, from 1997 to 2003 there was a flow of money from Parmalat to Sata (a Tanzi family holding, see Exhibit 5) equivalent to about €171mn.

However, the siphoning of Parmalat money through the personal off-shore holding web of Mr. Tanzi took place also using different methodologies, like, for example, the discount that Tetrapack allowed to its best customers. Parmalat paid the full price for packaging and then it was supposed to receive a refund each semester on the accounts of the companies pointed out by Parmalat. At least one of these companies to which Tetrapack was paying back the money was Carital Food Distributors, which belonged directly to Mr. Tanzi. The siphoned money was not only misappropriated to the founder's benefit. From Carital Food Distributors 1.3bn liras seem to have been transferred to Mr. Tonna's offshore companies between 1996 and 1998 in order to pay to the trusted CFO some bonuses. According to Tetrapack representative statement released after the bankruptcy, discounts between 1995 and 2003 amounted on average to €12.2mn per year (about 5.4% of €224mn sales). In 2001, however, the Swedish company started paying the amount directly to Parmalat Trading due to the new legislative restrictions and controls that were implemented after the terrorist attacks of 9-11. Therefore, this siphoning technique had to be abandoned.

Given the limited managerial skills shown by Mr. Tanzi and his team and the above described siphoning, some tricks were needed to boost earnings and to increase the available liquidity of

[11] According to Mr. Tonna's testimony, in 1994 -1995 Parmalat held a credit of 180bl toward Sata, one of Tanzi's offshore company. The credit was then moved to Curcastle thanks to a "letter of credit". In turn it was handed over to Zilpa.

Parmalat. The double invoicing was one of the techniques used for this aim. The mechanics of this fraud is clarified in the PWC report, to which unfortunately I do not have direct access. I made my best effort to reconstruct the operation in detail using other sources, like newspapers articles, books and Mrs. Chiaruttini's expert testimony. Unfortunately not all aspect can be clarified in detail. However, I believe I provide a good overview of the mechanics. The fraud related to invoicing was generated using two different procedures. I will consider them separately.

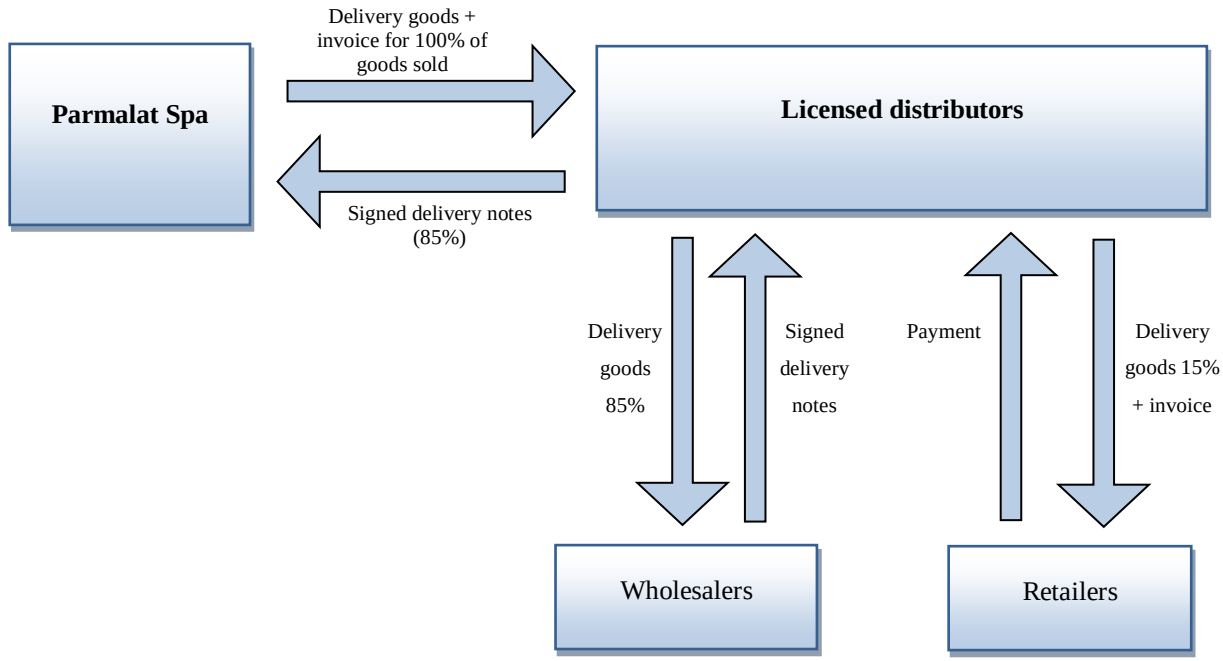

Figure 3: First phase of double invoicing

Before analyzing the details, it is important to understand the distribution structure of Parmalat. The milk company had 104 licensed distributors, of which 33 were directly controlled by Mr. Tanzi's family through offshore holdings. More in detail, Nyte Investments SA and Agis controlled Naipal Company Nv and Carital Food Distributors, which in turns controlled 33 of the licensed distributors (see Exhibit 6). In order to rely completely on its distribution chain, Mr. Tanzi elected only Parmalat managers in the board of directors of "his" licensed companies: a complete trust in the connivance of the controlled distributors was essential in order to realize the double billing fraud. These companies were very relevant because, according to the PWC report, they distributed about 40% of Parmalat sales.

Given the framework, the analysis of the fraud is now described in detail. The dynamic of the double invoicing, the first of the two invoice related frauds, is split into two phases only to make the clarification of the mechanics easier. In reality, there was of course no clear distinction between them.

In a first phase, Parmalat delivered its products to the licensed distributors and emitted an invoice

for 100% of the goods sold. According to Mr. Pessina, head of accounting for Parmalat clients, the distributors delivered about 85% of the products to the wholesalers and 15% to the retailers' shops. Concerning the business with this last group of retailers, no double invoicing was set up. In fact, the licensed distributors sent the invoice to the retailers (about 15% of the sold products) and collected their payments on behalf of Parmalat. In contrast, the wholesalers were not invoiced by the licensed distributors for the products they received (about 85% of the Parmalat sales) but they only had to sign delivery notes that were handed in by the distributors to Parmalat (see figure 3).

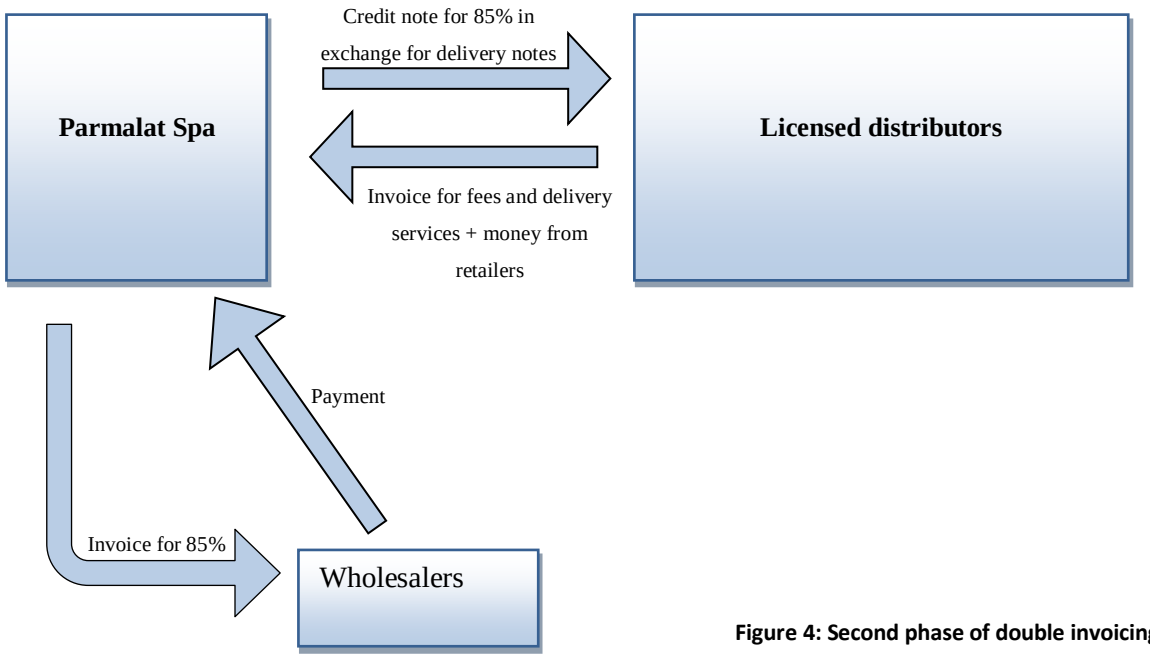

Figure 4: Second phase of double invoicing

In the second phase, Parmalat paid the licensed distributors with a credit note. The credit note, therefore, consisted of the amount reported by the delivery notes (about 85% of the total sales) plus fees due to the delivery services (and very likely some advertisement costs related to special offers and discounts). The licensed distributors sent Parmalat an invoice for the distribution services, which amounted to about 13% of the initial invoiced amount, and passed on to Parmalat the money received by the retail distributors (about 15% of the sold products). Finally, Parmalat sent an invoice to the wholesalers and collected their payments. The note of credit, in particular, was very relevant from an accounting point of view because it allowed Parmalat to write off in its financial reports 85% of the amount invoiced to the licensed distributors, still retaining the issued invoice. Consequently the company was able then to issue a direct invoice to the wholesalers. In the end Parmalat held two different invoices, one in the first phase (for 100% of the good sold) and a second one (for about 85% of the good sold) in the second phase. The company then used both invoices for factoring, financing or securitization operations. It was impossible to find out how the about 40 banks and factoring firms

that granted credit to Parmalat did not find out about the fraud. It is very likely, however, that Parmalat managers were very careful to distribute the invoices related to a unique transaction to different factoring firms. It is possible to speculate that invoices related to the same transaction were used at the same time for factoring and for securitization: the two complete different financing operations assured that the invoices related to the same transaction were handed in neither to the same company nor to companies that could exchange information with each other. In line with this hypothesis, there is a report of the Bank of Italy that raised the suspicion that the same credits discounted with some factoring financial institutions were also used for the securitization operation. It is also possible to believe that given that the factoring was pro-solvendo (i.e. with recourse) the controls were less strict because in this case the factor does not bear the credit risk. It must also be said that with the Ifitalia[12] financing a Ponzi scheme was implemented. In fact, Parmalat never repaid the money but quarterly handed in new invoices rolling their exposure. This methodology was probably used also with other factors

The second procedure set up to increase liquidity and related with false invoices was less elaborated. According to Mr. Pessina's testimony, this fraud was implemented since about the end of the 80s. It related to Ricevuta Bancaria (RIBA): this is a cash receipt issued by a creditor. It is used when a debtor (i.e. the licensed distributors) has an obligation to issue a cash order for part of the amount owed to the creditor (i.e. Parmalat) as a result of a product sale[13]. Usually the creditor issues an invoice plus a RIBA that is handed in to their bank, which in turn sends these documents to the bank of the debtor. The RIBA is then delivered to the debtor when he pays the requested amount. Of course, between the issuance of the RIBAs made by the creditors and the payment of the debtor there is a time span of typically 90 days. Parmalat issued many RIBAs without any underlying sales transaction but accompanied by fake invoices. The debtors were in this case the controlled licensed distributors. Of course, Parmalat provided the money to the debtors when they were supposed to pay, given that there was no underlying real selling. One of the aims of this system was to obtain by the banks some credit on the issued RIBAs. In addition, the mechanic recalls a Ponzi scheme: the money transferred to the licensed distributors to pay the RIBAs was taken from the advances obtained by the banks for the newly issued RIBAs. Mr. Pessina explained that in his view the Banks were not alarmed by the big volumes of advances because the RIBAs were always regularly paid. Mrs. Chiaruttini calculated that the RIBAs reported in the off balance sheet memorandum accounts (conti d'ordine) in December 2002 amounted to €611ml per year.

Another technical aspect that I am going to describe in this subparagraph relates to the previously explained RIBA fraud and clarifies the impact of this operation on the balance sheet and profit of the

[12] A factoring company owned by one of the main Italian banks: Banca Nazionale del Lavoro.
[13] The requested amount can vary according to the specific characteristics of the RIBA but for our purposes this aspect is not relevant.

company. I will better analyze the impact that these credit advances had on Parmalat balance sheet and profitability. As clarified by Mrs. Chiaruttini, Parmalat shaped its fraud the following way:

1. Parmalat issued a false invoice to be paid by one of the licensed distributors. The commercial credit and revenue accounts were increased accordingly.
2. Parmalat issued a RIBA in order to obtain the payment of the credit.
3. The RIBA was used for factoring: a debt toward the bank equal to the amount of the advance was registered.
4. Parmalat lent to the licensed distributors the money needed to pay the RIBA. Therefore a credit towards the distributor is recorded.
5. The credit in point 4 was given to a offshore company (mostly Rushmore Holding Co., Kelton Enterprise Inc or Carital Food Distributores Nv). Therefore, at Parmalat level, the credit toward the licensed distributor was turned into a credit toward an offshore company.
6. The offshore company in point 4 also took the responsibility for the debt Parmalat has toward the bank (see point 3). Therefore, in Parmalat's balance sheet, the debt toward the bank is turned into a debt toward the offshore company.
7. The credit toward the offshore company (in point 5) is compensated with the debt (in point 6) and brought to zero because the amounts are equivalent.

This accounting trick generated some more apparent revenues. The false invoices were justified as royalties, rights for exclusivity of distribution in some areas or interest expenses. In other words, one of the main aims of this operation consisted in boosting net assets also through a reduction of the liabilities; this helped obtaining more credit from the banks.

Going back to securitization[14], it seems clear that some of the "doubled" invoices were used to develop these operations. According to the Mr. Ghiringhelli[15]'s testimony, $348.5mn financing backed by supermarket billings were granted to Parmalat by Citigroup. Parmalat received a financing for $200mn for the receivables invested in Eureka, a Citigoup conduit for the securitization operation. According to the testimony of Mr. Pessina, Citibank employees were aware of the double-billing system as early as 1995, due to the due diligence made to set up the SPV Eureka/Archimede[16]: in particular, Mr. Albertini, the Citibank responsible for the operation, forbid the possibility of using invoices related to the licensed distributors and, as clarified by Mr. Pessina, only the retail shops invoices fed the securitization operation (at least in the first securitization phase). In addition

[14] As clarified by Mrs. Chiaruttini (2004) some Italian legal requirements for the securitization procedure were violated (for example the separation between Servicer and Originator). Therefore, according to her view, the procedure was improperly called securitization.
[15] A PWC auditor.
[16] Eureka was the SPV used by Citibank to develop securitizations. Archimede was the Italian SPV generated to comply with the Italian legislation and is the acquirer of Parmalat receivables. Eureka was used for finding the funding for the securitization operation.

according to Mr. Palmieri (2007), Citigroup installed a controlling system, called Enigma, that allowed the bank to evaluate all commercial operation of Parmalat. The consequent underuse of the financial structure (20bl lire maximum per annum according to Mr. Pessina) generated substantial losses to Parmalat, due to a yearly minimum amount of 150bn lire due as fees. It goes without saying that the money that should have been transferred from Parmalat to Archimede was always compensated by the issuance of new credits to be securitized and therefore no effective outflow of money from Parmalat took place. In 1999 instead of closing the loss generating deal Parmalat asked Citibank to include in a new securitization operation all the credits of Parmalat at a global level. It seems that at this stage also the double billing credits were allowed in the conduit, apparently no longer limited to retail shop invoices. According to the prosecutors between 2000 and 2003 €519mn were injected into Parmalat through the SPV conduit.

Considering the 2002 balance sheet, it is worth noticing that the situation of the commercial credits (securitized credits, factored credits and RIBAS) was completely out of control: their amount was higher than revenues!

The last point I will discuss in this chapter relates with the preferred shares issued between 1997 and 1999. Concerning their accounting treatment, the buyer of the preferred shares was entitled to ask at fixed predetermined dates for the nominal value plus eventual cumulated unpaid dividends. Therefore, the issued securities should have been accounted as liabilities and not as equity, as Parmalat did. The ownership of Parmalat preferred shares seems also related to some big legal problems that Merrill Lynch (ML) had. In fact, according to prosecutors, whose case is based on an Italian financial police (*Guardia di Finanza*) investigation, the bank set up a complex financial structure for reducing its exposure to Parmalat preferred shares that it owned in its portfolio. The accusation was that Merrill Lynch set up the Sirestar SPV in order to force Parmalat buying credit linked notes (CLN) related to the credit standing of the milk company. Then, the bank stipulated a credit default swap with Sirestar with triggering event the bankruptcy of the milk company. In particular, a strange coincidence is the fact that the overall contract notional amount was equal to the Merryl Lynch exposure to Parmalat preferred shares. As a result of this operation, two Merryl Lynch officials were investigated for complicity in criminal bankruptcy. Unfortunately, I could not find out more in detail how the operation was shaped nor I found any relevant reference to the SPV Sirestar in the financial reports of Parmalat.

2.4. The company structure

Franzini (2004) reconstructs in quite a level of detail the company structure that was implemented in the 90s. This paragraph takes inspiration from his book and tries to understand this aspect more in detail. This is a key point for understanding most of the frauds that took place during Tanzi's

management. In order to better follow this paragraph, it is convenient to consult Exhibit 3,4,5,6.

Parmalat was mostly organized through three sets of subsidiaries. The first group of companies used to issue most of the bonds: Parmalat Finance Corporation Bv, which was the conduit used for most bonds, and Parmalat Capital Netherlands (see Exhibit 3), which was controlled by Parmalat Finanziaria. In fact, from 1992 to 2003 Parmalat issued bonds 50 times for a total value of about €9.4bn (see Exhibit 8). Parmalat Finance Corporation Bv, which was controlled by Parmalat (see Exhibit 3) and was located in Netherlands issued bonds for €5.884bn while Parmalat Finanziaria issued directly only €516ml[17], according to Mrs. Chiaruttini (2004) figure reconstructions. It is not coincidental that the "Parmalat" brand is used in the names of the issuing companies. In fact, this was aimed at reassuring investors. The second and third sets of companies were more related to Tanzi's misappropriations and balance sheet manipulations. Regarding the second set, Curcastle Corporation and Zilpa, which were subsidiaries of Parmalat Austria and both located in Netherlands Antilles, were used until 1998 to hide the debts of Mr. Tanzi's personal companies, as clarified in subchapter 2.3.2. The debts of Mr. Tanzi's companies held by Zilpa, founded in 1990, and Curcastle Corp., founded in 1994, were after 1998 transferred to Bonlat. According to Tonna's statement during his testimony, the amount transferred consisted of about €1.5bn. The reason for this change has to be found in the bylaw rotation of the general audit firm. Parmalat, in fact, as all the other companies listed in Italy was required to rotate its auditor each 9 years (art 159, Draghi reform, 1998): that is, each auditor cannot renew their three year contracts more than 3 times. According to Mr. Tonna's testimony, the previous auditors of Grant Thornton, Mr. Penca and Mr. Bianchi, suggested to concentrate all the debt in a unique company called Bonlat and to allow them to keep certifying this company together with some minor financial holdings. In the end, Deloitte, which took over as audit firm, certified only about 51% of Parmalat assets on the consolidated balance sheet while the rest was still certified by Grand Thorton. Finally, the third set of companies was mostly related to balance sheet manipulation operations: for example, Parmalat Africa was transferred to Parmalat Austria in 2001 in order to register an appreciation of €75mn. This is also a common technique to manipulate the balance sheets: infra-group selling of overvalued subsidiaries in order to fictitiously increase earnings.

2.5. Forced acquisition of Eurolat?

I dedicate a chapter to the acquisition of Eurolat because it is in my opinion illustrative of the problems that the "relational capitalism" could generate. Cragnotti was an entrepreneur with a similar success story to Mr. Tanzi's: he focused on the food industry (milk in particular, after the acquisition of the Cirio holding, a big public company that was sold in 1992 by the public holding IRI managed by Romano Prodi), he cultivated political ties (the Cirio acquisition was possible thanks to

[17] Parmalat Capital Finance was the third big vehicle that issued €922mn of bonds.

the financial support of Banca di Roma managed by Cesare Geronzi), he bought a first league football team (Lazio AC). Unfortunately the political skills often do not go along well with the managerial ones. In fact, in 1999 Cragnotti's group run into serious financial difficulties. According to Tanzi, he was forced by Mr. Geronzi to buy Eurolat, which was the milk and dairy product division of Cragnotti's group, in order to avoid big losses to Banca di Roma, which was one of the financial institutions strongly financing Parmalat as well. The bank at the time lent 304bn liras to the companies grouped in Eurolat, which represented about 85% of the total debt of these companies. An excessive exposure if non-economic reasons are not taken into account. Therefore, a bankruptcy of Cragnotti's group would have had a strong impact on the bank balance sheet and it would probably have posed a threat for Mr. Geronzi's role in the bank. Mr. Geronzi had a substantial power on Mr. Tanzi because, if his bank started to reduce its exposure to Parmalat, this could have raised suspicion on the market given that Banca di Roma was among the biggest financial supporters of the diary food group. In the end, Parmalat paid 397bn liras for the equity and took responsibility for all debt[18]. Of course, Mr. Geronzi denies any allegation concerning his alleged pressures. The judges, however, sentenced him 4 year of prison for extortion from Mr. Tanzi, for contributing to the bankruptcy of Eurolat and for patrimonial diversion at the expenses of Parmalat shareholders (Eurolat was clearly overpaid)[19]. Mr. Cragnotti was sentenced 9 years for the same crimes. In addition, evidence supports Mr. Tanzi's version of the story, due to the legal problems that derived from the acquisition. In fact the antitrust authorities stopped the acquisition operation between Parmalat and Eurolat and imposed the selling of 5 brands and 4 factories. Mr. Tanzi fought legally and through political pressures, menacing to close all Italian factories of the group but obtained no result. Then, Mr Zini, the trusted lawyer of the group, set up a group of offshore companies and searched for what seems a man of straw: Mr. Caiola, an Italo-american businessman already involved in the food industry. He bought in December 2000 the assets that Parmalat was forced to sell and that had been grouped together in a company called Newlat. Mr. Cairola, however, sold after about one year (in Jannuary 2002) to ECM Euro Italia Acquisition Corporation owned by Mr. Buffa for only $40mn. As reported by Mr. Franzini (2004), at the time 70% of the milk produced by Newlat was bought by Parmalat. At the beginning of 2003 Mr. Buffa decided in turn to sell and the company ended up in the hands of Mr Zini's brother in law, Mr. White. In order to implement the acquisition, a company, Boston Holdings Corporation incorporated in Delaware in 2002, was used. Despite some

[18] In the end, Cragnotti's group went bankrupt anyway in 2002. Mr. Cragnotti himself was arrested and sentenced 15 years of jail due to fake accounting and criminal bankruptcy. On the other hand Geronzi was sentenced (in first grade) 4 years due to the attempt to collect as much money as possible from Cragnotti's group damaging the other debt holders. Between 2000 and 2002 Banca di Roma distributed (together with some other banks) bonds of the Cragnotti's group to savers, who lost in the end about 90% of their investment. In particular, the pool of banks selling the bonds had to reimburse many savers because the judges verified a lack in the compulsory information about the riskiness of the financial product, most of which were supposed only to be only sold to institutional investors.

[19] Mr. Geronzi cashed in 3bl liras for some services involved in the deal.

evidence the antitrust authority could never prove that the involved people were man of straw and shelved the procedure.

This paragraph is meant to provide an example of the limitation of "relational" capitalism: its limited focus on managerial skills, the wrong incentives that it creates, the *do ut des* (give and take) logic driving the financing/acquisition decisions and the long term damage and value disruption that it generates.

2.6. End of the story: 2000-2003

This chapter analyses the period until the bankruptcy. It is divided into two subchapters following the same logics as the two preceding chapters: in subchapters 2.6.1 the historical facts are described and in subchapter 2.6.2 more focus is dedicated to the accounting and technical issues.

2.6.1 An Historical overview of period 2000-2003

In 2000 Mr. Tanzi was in his glory moment: he was offered a seat in the executive committee of Confindustria (Italian employer organization), his stake in Parmalat assured him full control and Parmalat was one of the biggest Italian companies in term of capitalization. Furthermore, he was offered in 2001 a seat in the board of directors of Capitalia and Banca Intesa. In addition, Mr. Tanzi's friend Silingardi apart from being in the board of director of Parmalat and being president of the Cassa di Risparmio di Parma had a seat in the board of Banca Intesa. Therefore, the Parmalat founder had achieved the famous winning strategy for successful entrepreneurs in Italy: ownership of a football team for power and fame, access to a big national bank board in order to support the financing needs of the company and control of a listed company. However, in these years the ways to boost earnings became even more audacious. For example, Boston Holding Corporation was involved in 2002 in the acquisition of the licence to sell Santal juices in America and Asia for $210mn. The operation aimed only at artificially increasing earnings by intra-group operations. In 2000 Bonlat reported €159mn income generated through an "inexistent" swap allegedly agreed upon two months earlier with the Sumitomo Bank.

In 2002, according to the court sentence issued on the 29th of November 2011, Cesare Geronzi, President of Capitalia (which had incorporated Banca di Roma) exercised again strong pressures on Mr. Tanzi to make him buy for €35mn Ciappazzi, a mineral water company. According to Mr. Tonna and Mr Tanzi's testimony, Mr. Geronzi requested the acquisition of Ciappazzi at an unreasonable price in exchange for keeping benefiting from Capitalia financing. The story recalls very closely Eurolat. The problem was probably related to the need of the bank to reduce its exposure to the Ciarrapico group, which was owning Ciappazzi and was in precarious financial health. Mr. Geronzi was sentenced 5 year jail for his contribution to the bankruptcy of Parmalat and usury through this acquisition.

Probably two events in 2002 modified the attention of the markets with respect to the company leverage: Cirio (owned by Cragnotti) and Argentina both defaulted on their debt. The businesses of Cragnotti and Tanzi were quite close and, therefore, the market started questioning why the margins for the two companies were so divergent. In addition, Parmalat had heavily invested in South America and the local currencies were strongly devaluating with respect to the euro.

In March 2003 Parmalat joins the MIB30, the index of the 30 biggest Italian companies by capitalization. However, the market downward pressure on Parmalat shares was already strong after a short upsurge due to the good balance sheet data released at the end of 2002. All the fake liquidity accumulated in the years, first in Zilpa and Curcastle and then in Bonlat could have raised some suspicion. Therefore, the Epicurum fund was generated in September 2002. The idea was probably to give the resemblance of some financial activity with the huge liquidity accumulated and eventually to write some capital gains on the investment to boost earnings. In March 2003 Consob forced the company to clarify about the use of its liquidity and the existence of Bonlat and Epicurum fund was disclosed to the market during a meeting with the financial analysts. It was also clarified that Tonna resigned as CFO (contributing to generate a strong upsurge in share price)[20] and Mr. Maurizio Ferraris became the new CFO while Mr Luciano del Soldato was chosen as new administrative director.

If the accounting tricks aimed at boosting earnings (see subchapter 2.6.2 for a more detailed analysis) became extreme also the company money misappropriation followed the same path. In the Spring of 2003, according to Franzini (2004), a total of $10mn were transferred from Parmalat Capital Finance, Parmalat Finance Corporation and Bonlat to the Escrow account, a fiduciary account managed by Mr. Zini. The lawyer is instructed to transfer $4.5mn coming from Bonlat to Satalux, a subsidiary of Sata owned by the Tanzi family. The official reason was the payment of a fee to Mr. Tanzi due to his interest in the investment of Parmalat in the (inexistent) Epicurum fund. In other words, the transfer was justified as a kind of reward premium for the successful investment operation. $3ml were transferred to Third Millenium, a Luxembourgian company owned by Mr. Tonna. Officially it was an interest free loan granted to the ex-CFO. The reason of this form of transfer is to avoid taxes on bonuses, which was a more appropriate definition of the money received by Mr. Tonna. 1ml was retained by Mr. Zini as fees for his legal services.

In July 2003 the press started publishing articles that threw suspicion on the accounting practices of Parmalat: it was noted that, according to Bloomberg data, the debt reported in Parmalat balance sheet was lower than the amount of bonds circulating. It is surprising to notice that no analyst conducted such an analysis earlier.

[20]He retained his key positions in the board of Coloniale (the family holding) and Sata but he also left the presidency of Bonlat.

On the 11th of November 2003, the fraud started to be revealed: Deloitte did not certify the semiannual report because of the impossibility to verify the balance sheet of the Epicurum fund. The news was communicated to the management of Parmalat on the 31st of October but for unclear reasons it was disclosed to the market only on the 11th of November. In order to ease the worries of the market about the mysterious fund it was clarified by the management of Parmalat that the fund was going to be liquidated. A few days later, Mr. Ferraris resigned. Once the pro rata payment was not cashed in by the company, the fraud became clear and it had to be revealed on the 6th of December to the most exposed banks (Banca Intesa, Mediobanca, Capitalia[21], Sanpaolo IMI) in a meeting, in which they imposed Mr. Bondi as new CEO. On the 15th of December Tanzi resigned[22]. Few days later the news that the Bank of America account was inexistent was announced to the market. On the 27th Tanzi was arrested.

Tanzi tried until the very last moment to find some financing in order to re-launch the company. He asked Mr. Berlusconi for help but he did not receive any. The relation between the two businessmen had turned sour after the refusal of Mr. Berlusconi to sell one of his channels to Mr. Tanzi. Then he contacted some suspicious businessman (Mr. Manieri), whose money was not allegedly accepted by the banks due to the fact that the source was not unconditionally clarified. On the 4th of December, he tried also to establish a relation with Mediobanca general director Mr. Nagel. However, Mr. Tanzi has never belonged in the Mediobanca *salotto* (literally living room, essentially the influential circle of businessman related to the bank), which on the contrary he tried to avoid until then. Finally, he contacted on the 12nd of December Blackrock to make a joint recapitalization. It is unclear, however, where Mr. Tanzi would have taken the money for this operation: according to rumors, he would have personally invested about €4bn. Unfortunately, as clarified by Mr Zini in his testimony, Blackstone was made aware of the real situation of Parmalat and therefore it could have been convicted of insider trading, had it bought a stake in the company (apart, of course, from economic valuations). Indeed, the investment company did not want to have any involvement in the Parmalat business.

The dimension of the scandal and of the company forced an intervention from the government. A new legislation about "extraordinary administration", a bankruptcy procedure aiming at keeping the big company running instead of liquidating the assets, which is slightly reminiscent of the American Chapter 11, was introduced. Many called the new legislation the Parmalat law. I will analyze it more in detail in chapter 4.

On the 27th of December the group was declared insolvent by the Parma court and the extraordinary

[21] Capitalia was the result of the merger between Banca di Roma and Bibop Carire

[22] After the resignation, Mr. Tanzi left the country in order to "take a holiday" in Lisbon and in Quito. Some believe that in these days he secured the family treasury, which derived from the long siphoning of Parmalat money. "Tanzi's treasury" has not been found so far by the investigators and there exist no evidence that it actually exists.

administration procedure started.

2.6.2 Accounting and technical issues in the period 2000-2003

All the credits owned by Parmalat offshore companies toward the Sata subsidiaries (mostly related to Mr. Tanzi's touristic business) for about €380mn were handed over to the Epicurum fund. They should have been recorded as non-current assets in Parmalat balance sheet but thanks to the Epicurum fund they were turned into current assets. In the articles of association of the fund it was clearly stated that all the assets must be liquidated in maximum 15 days. This was needed in order to consider the fund as a cash equivalent in the consolidated balance sheet (otherwise it should have been defined as long term investment). In fact, liquidity was essential to reassure the market. However, in this period, the market started asking itself the reason why Parmalat kept issuing debt if such a strong liquidity is available. The official reply was that the company needed to lengthen the duration of the debt before the interest rates increased and to retain the possibility to catch eventual acquisition opportunities on the market.

As previously reported, some tricks were used to boost earnings and to hide the financial situation. According to the company statements (in March 2003), bonds for about 2.9bn were supposed to be bought on the market in order to reduce leverage. However, nobody noticed that the scale of this operation did not produce any impact on the bond market price. In reality, the bonds had not been bought. Furthermore, in order to improve the 2003 quarterly reports of Parmalat, Camfiel, a Singaporean subsidiary, sold 300ml tons milk powder to a Cuban state company. The amount sold was impressive and suspiciously unrealistic but nobody questioned the operation. The reason for this operation was to show good EBIT and EBITDA and a solid financial situation, especially at a consolidated level. This operation resulted, in the end, in a $359ml increase of the Bank of America fake account. In addition, always with the aim of artificially boosting earnings, according to Bocchi's testimony, some brands and technologies were sold to two companies (Boston Holding Corp. and Findairy). The two companies were probably empty boxes generated for this kind of operations.

In order to give an overview, Mr. Moss and Prof. Hamilton (2004) clarified what were the biggest accounts in which debt was hidden: the bank of America fake liquidity consisted of €3.9bn, the bond falsely reported as repurchased €2.9bn, the Epicurum fund €0.58bn, the fake commercial paper and promissory notes for €2.1bn, compulsory takeover bid on 18.2% of the Brazilian subsidiary for about €0.3bn, accounting treatment of Buconero LLC €0.1bn. A complementary overview is given in Mr. Bondi's report[23]. As we can see in Exhibit 1, Parmalat sources are 13.2bn from debt and 1bn from cash flows generated by operations. The uses of cash are structured the following way: 3.8bn for acquisitions and 1.6bn for fixed assets investments (therefore 5.4bn for industrial investments);

[23] The report refers to the interval 1990-2003; that is, it relates only to the period when Parmalat was listed.

2.8bn for financial expenses and fees in favor of banks and 2.5bn in favor of bondholders, 0.9bn for taxes and 0.3bn for dividends. Finally, 2.3bn were expenses not documented (which include the siphoning operated by Mr. Tanzi's family and by Mr. Tonna).

3. The behavior of banks and auditors

This chapter aims at analyzing the behavior of the main counterparties of Parmalat: the banks and the audit firms. Later in Chapter 4 I will analyze the role of the central bank (Bank of Italy) and of the market regulator (CONSOB).

3.1. The behavior of banks

In this paragraph I want to focus on the behavior of the banks and their relation with Parmalat. I also try to understand through a presumptive analysis if the bank were aware of the real situation of the company. If the main defense of the banks has consisted in stating that they also recorded big losses, it must be said that the divergence between the bankers' and the bank's interests (and incentive) might have been the reason why the losses were nonetheless generated. Parmalat was a wonderful client and the bonuses deriving from the investment banking services were probably quite substantial. In addition, many firms reduced their exposure using CDS (or selling the securities they hold) but they did not seem to communicate the reduced exposure to the market; I will give some examples. Therefore, in my opinion, the losses are not a sufficient condition to believe that the banks were not aware of the real situation of the company. Just to give an idea of the business generated only by Parmalat bonds, I use Franzini (2004)'s data to make a non-exhaustive list: JP Morgan Chase placed in the period 1997-2001 ten bond issues for a value of €3bn, Morgan Stanley between 2002 and 2003 three issues (to a total of €853ml), Merrill Lynch between 1997 and 1999 six issues for €870mn, Bank of America $1bn between 1997 and 2003 (this bank dealt with most of the private placements of bonds), Barclays €424mn, BNP Paribas €281mn, UBS €258mn, San Paolo IMI €1.3bn, Unicredit €875mn, Monte dei paschi €300mn. A better overview is given in Exhibit 8, where I report the data collected by Mrs. Chiaruttini (2004) on bond issuance[24]. To the bond issuance business I should add the financing through the bank lines of credit, the many acquisitions and the market operations. Then we have a clear picture of how important Parmalat was as a client. If the fees on all the transactions and the hedging are taken into account, it is possible that not all the banks having a substantial business relation with Parmalat suffered big losses in the end.

It is reasonable to assume that some banks had an information advantage compared to the market in the period before the bankruptcy. In fact, in the famous meeting following the missing repayment

[24] There are some minor difference between Mrs. Chiaruttini and Franzini data. The likely reason is the different time interval considered.

from Epicurum fund on the 6th of December a group of banks was revealed the real situation of the company. However, the company was suspended from quotation only on the 19th. In the period 6th-19th there was a situation of strong asymmetric information, which was only partially compensated by the leakage of information through the press. For example, on the 12th of December Parmalat was able to reimburse the expiring bond for 150mn. The price bounced 30% in the hope that the rumors about insolvency were exaggerated but this repayment was made possible only due to the residual cash (100ml), a VAT refund from the state (35mn) and 20mn that were an advance on the selling of Meriocredito Centrale[25] shares. It might have been possible that some banks, which were aware of the real conditions of the firm, could have profited from this upsurge in price. As a matter of fact under this perspective it is unclear why Parmalat was not suspended from negotiation earlier. However, this issue relates to the CONSOB decisions, which will be discussed in next chapter.

If it seems quite certain that the banks were aware of the situation after the 6th of December, is it possible to suppose that they knew about it also earlier? Of course this is a presumptive analysis given that no crystal evidence exists. However, it is possible to believe that the exposures of some banks were not so massive as they seemed due to the quite common use of hedging strategies.

As early as 1999 Buconero, a company originated by Citigroup and incorporated in Delaware, stipulated a contract called "associazione in partecipazione" with Geslat, a Parmalat subsidiary. This contract reminds one of a limited partnership: it consists in the right to obtain some of the earnings from Geslat in exchange for the prior payment of an agreed sum. The point is that through this structure Citigroup financed the milk company but the sum was not recorded in the Parmalat balance sheet as debt but as equity (*Patrimonio netto di spettanza di terzi*). However, Citigroup communicated to Centrale rischi, the Bank of Italy's debt registration system, the "credits" that the bank granted Parmalat: i.e. the American bank considered the amount granted as debt and not as an equity stake. What is really interesting in this case is the name chosen for the company: Buconero means in Italian black hole; a rather surprising name. This could raise suspicion that in Citicorp[26] some bankers knew about the real situation in the company as early as 1999.

Another episode that allows for some skepticism about the limited knowledge of the banks about Parmalat financial health is the bond sold at 98.026 below par to Nextra Investment Management Sgr (an asset management company owned by Banca Intesa) in June 2003. The investment banking taking care of the entire operation was Morgan Stanley. The interest rate that was disclosed to the market was 3.05% plus LIBOR. According to the email sent by Mr. Marco Ratti, Nextra employee

[25] Mediocredito Centrale was the Capitalia investment bank unit. Capitalia was the bank resulting from the merger of Banca di Roma and Bipop-Carire.

[26] Parmalat was a great client for Citigroup: the bank was the advisor for the two big acquisitions in Canada (Ault food Limited and Beatrice Foods) and one acquisition in Argentina (Lactona-Gandara) and minority shareholder of Parmalat Canada Inc.

responsible for strategies, to Mr. Giovanni Landi, CEO of Nextra, "the real yield was not 305 bp, as disclosed, but 350bp and the overall conditions of the bond issuance are those of a high yield bond". He added that if he were the CFO of Parmalat he would not have struck such a deal. He also reminded Mr. Landi to keep this information private because it was price sensitive. In fact, considering the existed payments related to the many covenants and the substantial initial bullet payment, the paid interest was much higher than the one disclosed to the market. According to Mrs. Chiaruttini's calculation, the nominal value of the bonds issued on the Luxemburg stock exchange was €300mn but Parmalat cashed in only €256mn. Simultaneously to its bond investment, Nextra had communicated to Consob and to the market that its share ownership declined below 2% (which is the minimum legal threshold that imposes the obligation to inform Consob about the owned stake). As said, the bonds included some covenants based on the performance ratios (specifically interest coverage ratio[27]) whose existence was not disclosed to the market. In addition, Nextra required the right to force Parmalat to agree to similar covenants with other investors, should it decide to sell them the bonds. The requested guarantees raise some suspicion that Nextra was aware of the economic condition of Parmalat. In fact, the possibility to transfer the (undisclosed) covenants to new investors granted a strong bargaining power in case of a quick disinvestment However, the interest coverage ratio was based on accounting values and this makes us believe that Nextra could not be aware of the fraud given that the accounting manipulation taking place hit also the chosen ratios. After only 3 months, in September 2003, Nextra informed Parmalat that it wanted to sell the bond either on the market in smaller amounts or back to Parmalat (the bond had reached an above par value). According to Mr. Tonna, this request implied that Parmalat management was forced to buy back the bond (at a premium) or to find new investors because otherwise the real terms with respect to the covenants would become public and it would be clear that Parmalat was not in great financial shape, given the conditions that it had accepted. In addition, the fact that Parmalat had never issued bonds with such covenants could have raised suspicion and problems with all other bondholders. At this point Morgan Stanley bought back the bonds owned by Nextra at 103 above par in two tranches (the first at the end of September and the second at the end of October) but asked in exchange a bank account on which Parmalat deposited about 185ml euro. The reason why Morgan Stanley did not ask the guarantee for the entire amount paid to Nextra was that a few days after buying the second tranche (between 17 and 24 October), Banca Popolare di Lodi bought 100ml bonds at 102 above par, bringing Morgan Stanley exposure to zero. Of course, the loss experienced by Morgan Stanley, which bought at 103 and sold at 102, was paid up by Parmalat

[27] In detail the interest coverage ratio was calculated as the (EBITDA+ interests on leasing operations)/(interest expenses+(Interest on leasing operations/3)+dividend on preferred shares). If the ratio reached in the range 4.5-4.25, the interest rate paid by Parmalat increased by 50bp and if it reached the 4-4.25 interval the rate increased of 100bp. Below value 4, Nextra had the right to sell the bonds back to Parmalat at the nominal value.

(about €1ml). The decision of the local Italian bank, which at the time was managed by Mr. Fiorani[28], to buy the bonds was probably driven by political more than economic considerations. The remaining bonds were sold to international financial institutions: €50mn to Abn-Amro at 101.1 above par (on the 17th of October), about €20ml had already been sold to two British institutional investor at 103,75 and 101.28 above par (in September) and about €130mn, first tranche €80mn and second tranche €49.252mn, were sold to Deutsche bank at respectively 80.75 to par, and 82.75 to par. It goes without saying that Parmalat covered again the losses of Morgan Stanley deriving from the selling to DB (well below the 103 paid by the American bank) and to Abn Amro. The money transferred by Parmalat to Morgan Stanley amounted at about €25mn[29] not taking into account the €7mn paid as fees for the bond issuance. I will analyze later in the paragraph more in detail the specific position of DB but I can already point out that the acquisition of a bond 15 points below the par makes us believe that the bankers of DB at least suspected that there existed some serious financial issues. The Nextra bankers as well probably knew about the situation given the decision to hold the portfolio only for a few months and to ask for the transferability of all requested covenants. In the end, Nextra closed the bond deal with a substantial capital gain and Morgan Stanley profited without taking any risk. Of course, requesting a higher interest rate for what is perceived as a risky investment is a normal behavior on the market. What is less correct is the fact that the institutional investors allowed Parmalat not to disclose the real conditions of the deal in order to exploit the situation in terms of loss guarantees and covenants. This behavior might have induced many investors to commit an error in the valuation of Parmalat stocks: many believed that, for example, if Nextra was willing to lend money to the company at the disclosed condition, which were as said not the real ones, then the company probably was not in such critical financial conditions. From a legal point of view, some of Morgan Stanley and Nextra officials are currently under trial for complicity in criminal bankruptcy: the prosecutors believe that they helped Mr. Tanzi to procrastinate the declaration of the insolvency, even if they were aware of the real financial conditions of the company. Concerning the crime of agiotage (leakinng of false or exagerated information to manipulate market prices) due to the partial information released to the market about the real conditions of the bond, Morgan Stanley was discharged; while Nextra officials decided to plea bargain before the delivery of the final judgment. From a civil law point of view, Nextra paid to Parmalat €160mn and Morgan Stanley €155mn to close any claim for compensation from Mr. Bondi.

Another interesting episode is the complex financial operation developed by Credit Suisse (CS) between May 2001 and January 2002, which could show how the alleged loss of money for the banks could have been much lower than expected due to mainly undisclosed hedging. The first step of the

[28] Mr. Fiorani was sentenced to more than 3 year jail for offences related to the Parmatour bankruptcy and was later involved in the "Banca Antonveneta" scandal.
[29] This amount includes some minor expenses.

financial operation was the issuance by Parmalat Brasil of a 500mn convertible bond entirely subscribed by CS. Simultaneously a forward sale agreement forced CS to sell the conversion rights to Parmalat. The point of the operation was to improve some of the ratios of Parmalat Brazil (as said, the South American business had always been losing money), which without intervention probably violated some debt covenants. The fact that the bond was convertible allowed it to be registered as equity instead of debt and about €250mn were cashed in by the company (€500mn from the bond less the acquisition of the conversion rights). According to Mrs. Chiaruttini (2004)'s reconstruction, partially based on the interview of Mr. Ryan (CFO of Credit Suisse) to Reuters, the residual exposure of CS should be only about €116mn and not the entire amount, i.e. €500mn[30]. This must be due to the buying of CDS or the selling most of the bonds on the market. Through a careful reconstruction, it is possible to verify that CS seemed to have earned quite substantially from this operation: the bank cashed in the value of the bonds resold on the market, which given the residual exposure is a substantial amount of the bought bonds, plus €248mn for the conversion rights, plus more than 3ml in fees and, due to the covenants related to the trigger event of Parmalat bankruptcy, an "additional settlement amount" of €245ml.

Concerning Deutsche Bank (DB) it might be possible that its employees also suspected of the Parmalat situation well before the bankruptcy. The bank bought about 130mn euro of bonds from Parmalat (i.e. most of the bonds sold by Nextra) much below the nominal value and requested that most of the money be used to repay the debts that Parmalat had with the bank, that is that they avoid increasing their exposure. Deutsche Bank had underwritten at the end of September 2003 bonds for €350ml at 95.74 below par (at a rate 6.125%) on behalf of Parmalat. On the 25th of November 2003, DB earned a consulting mandate as rating advisor. The main task was to issue an information memorandum and to support the company's image and rating with Standards&Poor. In this occasion, it is very likely that the bankers discovered the real situation inside Parmalat, given the access they had to internal documents. Furthermore, DB informed the market that in November it increased its Parmalat stake to 5.11%. However, on the 19th of December the stake reported consisted only of the 1.6% (and credit lines for 10ml were closed). In reality, it seems that the 5.1% ownership disclosed to the market included some shares in the hands of the bank due to some borrowing operations, which therefore cannot be included in the exposure of the bank. Only on the 8th of January 2004, much time after the bankruptcy, did DB inform the market with a note about the fact that the bank exposure to Parmalat was not relevant, that their stake consisted only of 1.57% of the shares and that the 5.17% ownership included some borrowed shares needed for a client operation. It is unclear why the bank decided to disclosure this information so late. Furthermore, it

[30] In the interview Mr. Ryan affirmed that the provision related to Parmalat in the fourth quarter of 2003 consisted of 161ml. If we subtract the 45ml credit line exposure, we can find out that the exposure was about 116ml.

seems that the bank tried to join the Parmalat reorganisation. In fact, Del Soldato gave mandate to Deutsche Bank to find an acquirer for the North American activities.

Concerning UBS, the bank underwrote two bonds issued by Parmalat Finance Corporation BV and guaranteed by Parmalat for a total value of €420mn at the allegedly favourable coupon rate of 5.10% and 5.20%. The real bond yields were 6.24% and 6.34% because the bond was underwritten below par. The difference between the two bonds was mostly that one bond was to be listed on the Luxemburgish stock exchange while the other was not. The operation seemed a normal financing operation but many details were not disclosed to the market. However, when Mr. Bondi sued UBS in order to recollect some money from the bank, it became of public domain that this operation was not as crystal clear as previously supposed[31]. In fact, 20mn were paid as fees and 290mn had to be used to buy credit link notes issued by Banco Totta y Acores and underwritten by UBS which offered an interest rate of 6.34%, substantially in line with the real yield of Parmalat bonds. In addition, the credit link notes related the repayment to the event that Parmalat did not go bankrupt or defaulted on its debt[32]. The suspicion that UBS was aware of the financial problems of the company is legitimate: the huge paid fee (20mn to receive in reality only 110mn liquidity), the chosen credit event and the fact that the bankers bonuses probably doubled due to the additional selling of Totta y Acores credit link note, allows for suspicion that the bankers understood the real situation but, despite this, they wanted to implement the financing operation. It is also important to underline that UBS stipulated an interest rate swap and a credit default swap with Banco Totta y Acores in order to benefit from the cash flows resulting from the credit event, i.e. Parmalat bankruptcy (in exchange the Portuguese bank financed itself at a convenient variable rate). Finally UBS hedged the risk on the remaining €110mn through a CDS with other institutional investors. This complex structure was the only possibility to strike the deal and cover the exposure: an eventual hedging for €420mn would have given rise to suspicions about the financial health of the milk company and it was doubtful that the bank could have found one or more counterparties for such an operation. The fact that UBS bankers were aware that something strange was happening is correctly observed by Mrs. Chiaruttini. She underlines that the interest yield on the Totta credit link note was 6.34% and that it was above the yield paid by Parmalat on some of its bonds; therefore, in terms of interest, it would have been more convenient to use the allegedly available liquidity instead of striking the deal with UBS. Professional bankers like those working in UBS could not avoid noticing that Parmalat managers were desperate for cash.

[31] Some points are not entirely clarified because I could not find sufficient information.

[32] The covenants were in reality more subtle. If the credit event took place (i.e. Parmalat bankruptcy), then UBS was supposed to search for at list five acquirers of a tranche of the credit link note (minimum €10ml), whose offer was at least 30% of the nominal value. If the Swiss bank could not find any such investor then Parmalat was not entitled to receive any payment, otherwise the bank would have searched for other acquirers (up to 5). Once no more acquirers were available, Parmalat would have been reimbursed the credit link note at the average price of the offers received up to that point.

The above mentioned behaviours only showed some evidence that the big banks were probably aware of the situation. The banks were not very transparent in the disclosure of the conditions of their operations and some very likely tried to profit from Parmalat, probably knowing about the management's need for cash. However, this cannot be considered per se as a reprehensible behaviour: extremely risky investments require high interest rates. In addition, it cannot be excluded that some incidental effects took place: some banks probably decided to throw "good money after bad" in the hope of reducing their exposure in the future. It must also be said that some banks are under trial for helping Mr. Tanzi to realize the criminal bankruptcy; 30000 small investors asked to bring a civil action in the criminal proceeding.

However, if the above mentioned behaviors are debatable from an ethical point of view, some others were really reprehensible and unacceptable. In the following part of the chapter I will focus on them.

Parmalat bonds were issued abroad mostly through Parmalat Finance Corporation BV and they were only subscribed by institutional investors. However, most of the wholesale banks sold the bonds to small investors (even in the days before the bankruptcy) through their retail network allegedly in violation of the Italian legislation. In fact, in case of public offering, the bank is supposed to hand in a prospectus that clarifies the operation and the involved risks. In addition, there are also some clients reporting that they were not even informed about the fact that the bonds were listed on the Luxembourgian market. The legal defence of many banks consisted in the fact that there was no public offering taking place but thousands of private negotiations were opened. Their argument seemed rather weak and consequently many banks preferred to negotiate a partial refund to their clients. It is in my opinion at least suspicious that the banks wanted to invest their clients' money in Parmalat bonds without following a legally safe procedure. This behaviour might raise the suspicion that they wanted to get rid of the securities as soon as possible given the deteriorating situation. The sentence of the *Cassazione* (i.e. the last grade of judgment) on 21st October 2012 stated that the investment in Parmalat bonds was a risky investment and that the banks did not inform the clients about the risk profile. Therefore, the banks, which sold the bonds, will have to refund their clients. In particular a document of the Bank of Italy, transmitted to the Parma court, shed light on the bonds holding of the banks most exposed to Parmalat bonds (Citibank, Intesa, Capitalia, BNL, Capitalia, Sanpaolo Imi, Banca Popolare di Milano, Banca Popolare Italiana, Deutsche bank, Monte dei Paschi and Unicredit). According to Mr. Oddo (2007) reporting of the Bank of Italy document, at the end of November 2003 the above mentioned banks had bonds in their portfolio for €175mn. In one month, they sold bonds, mostly to retail customers, for €145mn, retaining €30mn of bond in their proprietary portfolio[33]. It is very interesting to notice that Capitalia (i.e. the bank deriving from the

[33] Banca Popolare Italiana reduced its portfolio from €114.3mn (in November 2003) to €18mn(in December 2003), Sanpaolo IMI from €102mn (in December 2002) to €126000 (in December 2003), Unicredit from €83mn

merger of Banca di Roma with another minor Italian bank), the bank closest to Mr. Tanzi, started selling most of the bonds in its portfolio between 2000 and 2001 and remained with only €480000 of bonds in December 2003. Being the bank with a very close link to Parmalat, which it repeatedly financed, it is possible that its managers (mostly Mr. Geronzi) were aware of the real financial situation of the company. However, it is also possible that the Roman bank was substantially financing the company directly through credit lines and, therefore, it did not want to increase its exposure. Some trials on specific operations set up by some banks to sell Parmalat bonds to unaware savers often ended up with the conviction of the bank and its obligation to compensate the customers: for example Unicredit private banking was convicted (in second grade of judgment) to pay back €260000 for an investment in Parmalat bonds made by two farmers.

Concerning the international bank, it must also be said that Citibank, Bank of America, Deutsche Bank and Morgan Stanley were discharged by the accusation of agiotage: the prosecutors had accused the banks of having issued false information concerning the financial health of Parmalat in order to sell Parmalat bonds more easily. UBS and Nextra did not join the trial because they plea bargained the sentence before the final judgment. More details about the trials are given in chapter 6.

Another important point that makes us reflect is raised by Mr. Moss and Prof. Hamilton (2004): Merrill Lynch, Lehman Brothers and Goldman Sachs started issuing research report questioning Parmalat situation as soon as end of 2002; while, Citigroup and Deutsche Bank issued reassuring reports until a month before the collapse. Deutsche Bank was even suggesting buying the shares due to "the strong cash flows" produced by the company. Therefore, it is interesting to notice that the companies more involved into business with Parmalat were also those for which the analyst warning arrived later. Smith Barney, a subsidiary of Citigroup issued a report on the 17th of November 2003 (the company will go burst few weeks later) and suggested to investors to buy Parmalat shares given "the sound fundamental and the substantial growth perspective following Q3 report". In addition, as underlined by Mrs. Chiaruttini (2004), Citigroup still had a buy on Parmalat shares on the 8th of December 2003. This observation follows the concerns about the biases of analyst reports as can be inferred from the descriptive statistics of Barber, Lehavy, McNichols and Trueman (2001). From the previously provided evidence, we can be reasonably sure that some banks were able to forecast the company's bankruptcy but they decided not to release this information in the analyst reports. If strong suspicion were raised by some banks about Parmalat financial health, it is possible to wonder why other banks did not want to make their clients aware of the already raised problems related to the milk company. It could be legitimate to wonder if the size of the ongoing business with Parmalat

(in December 2002) to €4mn(in December 2003), Monte dei Paschi from €23.5mn (in December 2002) to €6.5mn(in December 2003). Intesa had €2mn(in December 2003) bonds left in its portolio.

obfuscated some analysts' views.

3.2 The role of the internal and external auditors. Did they know?

If the real role of some banks in the Parmalat bankruptcy is debatable, the situation is different for the auditors, both internal and external ones. Of course, in this case as well there is no unquestionable evidence but some events shed some light on the likely collaboration of the auditors. I will also analyse in this paragraph the different internal controls[34] that Italian legislation imposes on quoted companies and their effectiveness in the case of Parmalat.

The internal controls in the specific case of Parmalat consisted in two institutions: the board of statutory auditors and the auditing firm. The typical governance structure in Italy requires the existence of a board of statutory auditors that have the responsibility to check the correct administration of the company from a legal point of view. Their role is to monitor the company and the decisions of the board of directors as if they were an "internal auditor". The legislation (Draghi reform, 1998) is rather strict on the number and criteria for selecting its members. Despite this, this board did not work properly in the case of Parmalat: in December 2002 Hermes Focus Asset Management Europe Limited, the only institutional investor investing in Parmalat at the time, requested the intervention of the board for some suspicious transactions. However, the board of statutory auditors replied that no illegal conduct was to be detected. This is probably due to the fact that its members were close to Mr. Tanzi's family. However, the external auditors, Grand Thorton and Deloitte in Parmalat case, also did not raise any observation about the asset management company's concerns. The fact that accounting firms generate very little margin from the auditing business and use this function as a way to generate additional consulting business is a problem that was addressed by the Sabanes-Oxley law in US. Some specific regulation is also needed in Italy where, as later clarified in this chapter, one of the Deloitte Italian partners buried the remarks of a South American employee concerning Mr Tanzi's siphoning in order not to lose Parmalat as a client.

Mr. Penca and Mr. Bianchi of Grand Thorton (before employed at Hodgson Landau Brands) were probably helping Mr. Tanzi to set up the fraud. They were Parmalat external auditors since the eighties. In addition, they took responsibility for certifying Bonlat balance sheet until the bankruptcy. The liquidity on the fake bank of America account (owned by Bonlat) was generated with a scanner and a computer by Mr. Bocchi and Mr. Tonna, surely not two professional forgers. In addition, liquidity is easy to verify and is not subject to valuation uncertainty. Given the amounts involved a phone call to Bank of America should have been best practice. In addition the move of all the fake credits towards Tanzi's company from Zilpa and Curcastle to Bonlat in the year when the audit firms had to rotate from Grand Thorton to Deloitte looks very suspicious.

[34] With internal controls we mean those paid by the company, while external controls are those related to the public surveillance (i.e. Bank of Italy and CONSOB).

Concerning Deloitte employees, it is difficult to say to what extent they were aware of the fraud but it is likely that they had at least some suspicion about some of the misappropriations. As early as 2001, Mr. Olivetti, a partner at Deloitte in Brazil, informed Mr. Mamoli, the responsible partner in Italy, of some strange transfers of credits toward Bonlat and of the eventual siphoning. His insistence only produced an email of Mr. Mamoli to Mr. Copeland, CEO of the firm, in order to stop Mr. Olivetti remarks that could have brought to the abrupt suspension of Parmalat mandate. This event is of course very relevant and shows that the partners in Deloitte could have been aware of some strange operations related to Mr. Tanzi's misappropriations but they did not want to investigate further. In addition, according to Mr. Franzini (2004)'s research, Parmalat Malta holding and its subsidiary Parmalat Capital Finance were both legally domiciled in Colonello Savona street in Malta. This address coincided with the Deloitte branch on the isle. This could also be a coincidence, of course. The point, however, raises suspicion on the real role of Deloitte due to the fact that Parmalat Capital Finance had among its subsidiaries Bonlat (see Exhibit 3) and that the company was also used for the bank transfers on the Escrow account (i.e. for Tanzi's and Tonna's siphoning of the company money). Finally, another suspicious event is the fake selling of brands and technologies between Bonlat and Boston Holding Corporation. According to Zini at a first glance it was possible to recognize that the contract was false: it was written in terrible English and resembled a similar contract that he elaborated. In addition, such a contract should have been subject to 30% taxation due to the absence of a commercial treaty between Cayman and US, which was not the case in the accounting of Parmalat. Therefore, it is legitimate to wonder if it was possible that professional accountants at Deloitte or Grand Thorton[35] did not realize these aspects.

4. Parmalat in the setting of Italian Capitalism and legislative framework

This chapter aims at putting the Parmalat scandal in the framework of Italian capitalism and at giving a quick overview on the legislative setting. This will give the reader a better understanding of the reasons why the scandal could take place. In particular, I will analyse the role of the Bank of Italy and CONSOB but I will also consider the limits of the Italian market with respect to institutional investors.

The Enron scandal was mostly based on out-balance sheet operations through SPV managed by banks and sometimes by the company managers. The balance sheet was consequently improved due to the selling of assets at inflated prices registered as revenues with the promise of a buy back at an

[35] It is not clear which of the two accounting firms was certifying Boston Holding Corporation.

even higher price, which was not reported in the balance sheet[36]. Therefore, it is possible to affirm that the fraud in US was realized using complex financial tools and exploited some gaps in the US legislation concerning the financial statements (in order to avoid consolidation of the SPV a small outsider ownership of the SPV was sufficient). The Parmalat case presents different characteristics. The main mischief (i.e. the Bank of America fake account) was realized through a paper forgery, even if also offshore companies and structured products played a role too. In other words, the simplicity of some fraudulent mechanisms in Parmalat leaves to a larger extent a degree of suspicion about the real unawareness of some of the stakeholders, which does not seem to be the case for Enron. As correctly stated by Mr. Tonna, "If experts had compared our balance sheet with the public data on our bonds, they would have found out a big difference and they would have realised the amount of our real debt". These words underline even more the simplicity of the fraud and the responsibilities and limitation of the Bank of Italy and CONSOB. In fact, the central bank has at its disposal the *centrale rischi*. This database reports all the debt position of Italian companies and it would have allowed with an easy query to identify the discrepancy between the debt declared in the balance sheet and the actual debt of the company, as we will see later in the chapter. However, Consob also bears a substantial responsibility for not having requested access to this database and for not having investigated the company more promptly and effectively.

If the institutional investors failed to detect the fraud in the case of Enron, where they owned more than 50% of the equity, given the complex tools used and the loopholes in the legislation, in the case of Parmalat they could have worked extremely well as control layer given the simplicity of the fraud. Unfortunately, they did not hold a substantial stake in the company and, therefore, did not have strong surveillance incentives. As a consequence, this layer of control was not very effective: looking at historical data on the Consob website[37] I found that the holdings of Parmalat stocks by asset management companies is very limited. In fact, the only institutional investor stakes, each consisting of an ownership between 2% and 3% of the shares, reported on Consob website are the followings: in 1999 Intesa Asset Management (stake sold before the end of 1999); in 2001 Lansdowne Partners limited (sold in first semester 2002); in 2002 Shroeders Investment Management (only first semester of the year), Hermes investment Management Limited (sold in first semester 2003) and Hermes Focus Asset Management Europe Limited, who remained the only reported institutional investor in 2003. This is not an exception but it is a characteristic of the Italian stock market, which is generally speaking less liquid. In addition, fewer analysts follow local companies. Therefore, ceteris paribus it is easier compared to the US to get away with this layer of control: if institutional investors were more relevant in Parmalat equity, they would probably have detected some elements of the fraud. To

[36] The way to avoid consolidation consisted of getting rid of some ownership of the SPV in favour of banks or financial institutions (or alternatively of company managers). The company retained the control *de facto* but legally did not have to consolidate the SPV in its balance sheet.
[37] The market regulator requires only the stakes above 2% to be reported.

underline the importance of the institutional investors, it is interesting to recall that in December 2002 Hermes Focus Asset Management Europe Limited filed a complaint with the board of statutory auditors about some suspicious transaction taking place.

However, apart from institutional investors, in the case of Parmalat other two layers of control failed: firstly, the internal controls required of each quoted company (as showed in the previous chapter), secondly, the public authorities like Consob or the Bank of Italy. Finally, the Italian Code of Best Practice was also violated.

The external controls (CONSOB and Bank of Italy) should be more effective because they are granted a high level of independence. However, as already underlined, the available databases were not consulted. As clarified by Mr. Rordorf, a high ranking judge who worked 5 years in Consob, the possibility of detecting frauds is very limited when balance sheet data (i.e. the numbers to be crunched) are fake. This is due to the fact that the total number of employees at Consob at the time of the Parmalat scandal consisted of about 450 people. Furthermore, Mr. Rordorf underlined the fact that a job at market regulator is not sufficiently alluring for qualified analysts in terms of salary and career path. This results in the fact that Consob might experience some weaknesses in this competence area. This opinion could help us understanding why the market regulator did not intervene promptly. On the contrary, more cynical commentators suggested that Mr. Tanzi's political power could have influenced the timing and scope of Consob's intervention.

Concerning the responsibilities of the Bank of Italy, the bonds issued on the Italian market, which require the central bank approval, went through the controls without any hesitation. In addition, the Bank of Italy could have easily used the proprietary database (*centrale rischi*) to verify that, as underlined by Mucchetti (2004), the amount of bank-related debt reported in the balance sheet of Parmalat (which also includes foreign financial institutions or Italian financial institutions generating business through foreigner subsidiaries) was not compatible with the credits towards Parmalat reported in the *centrale rischi* for Italian financial institutions. This is especially true in June 2003 when the two figures clearly do not fit together. However, in 2002 too the misalignment would have been clear if one considered the inclusion of some of the bonds issued in the bank debt account reported in Parmalat balance sheet and consequently considered the aggregated value of bonds and bank debt for the analysis. In other words, in 2002 the *centrale rischi* reported a debt of Parmalat toward national institutions (and foreigner institutions with an operating subsidiary in Italy) of 3.182bl euro, the total debt in the Parmalat balance sheet amounted to €4.502bl. This implies that the debt Parmalat had towards foreigner institutions and all the bondholders[38] amounted only to about 1.320bl.

[38]As said, the debt reported in Parmalat balance sheet (4.502bn) wrongly included some issued bonds.

Finally, I want to address the best practice code (Preda code) violation. Some politicians and professors believe that Parmalat fraud shows the need for a reform on the issue of independent non-executive directors, which in US was developed in the framework of the Sarbanes Oxley Act that defines stringent requisites for their election. Also in Italy, clear rules in a legal setting would be much more effective than a best code practice. In fact, the Italian law imposes that among the lists of directors to be voted by the shareholders, there is at least one independent member[39] who is selected according to the criteria used for the board of statutory auditors or the more strict rules of the best practice code (this second choice can be implemented only if the statute of the company accounts for this possibility). As underlined by Prof. Onado, a Bocconi professor and one of the main experts in the field of Italian corporate governance legislation, there is a trade-off between the balance between minority protection and the efficient running of the board of directors. This balance should be carefully addressed. Indeed, the fact that most of the Italian company are unassailable and that there is a tendency towards cross ownerships, which allow to elect board directors that are considered nonetheless independent according to the above mentioned rules[40], generate the need for an urgent reform. Prof. Onado, for example, in agreement with the Sarbanes-Oxley and SEC guidelines, suggests that the new law should refer to the best practice code for the requirements of independency (i.e. invalidate the possibility to use those requirement defined for the board of statutory advisors). In particular, the reform should clarify the following point: if a director is sitting in the board of companies, in which the director' company owns a stake, or she belongs to the board of a company joining the shareholder's agreement (a common case in Italy), she cannot be considered independent. This would surely reduce the impact of cross ownerships on corporate governance. However, it must also be said that in the corporate finance literature there is not much empirical evidence concerning that fact that independent directors make a difference for the firm value. Therefore, some professors believe that this legislation is an unnecessary burden for the companies. In addition, there is also little empirical evidence about the fact that separating the role of chairman and CEO has a big impact on firm value. This was another issue that relates to Parmalat violation of the best practice code, as we will see in the next paragraph. In my opinion, even if it is possible that independent directors do not make a big difference for the normal running of the company operations, as the empirical evidence shows, they could make a big difference in case of fraud because their reputation is at stake. Therefore, there might be some scope for legal measures aimed at imposing the best practice code.

Now that the Italian corporate governance legislation and its weaknesses are better clarified, I can

[39] The members must be two if the board comprises of more than 7 people.

[40] Especially, the possibility of cross ownership invalidates the possibility to consider directors elected by the minority shareholders as really independent and generates the need for a law that takes care to define the criteria of independence. This happens because the minority shareholders are the same that agreed on the cross ownership and they will therefore pursue the interest of the majority shareholders.

address the failures in Parmalat case. The company violated the best practice code in many points, as underlined by Mrs. Francesca Torinato and Prof. Tapies (2004). In particular, the company board of Director was allegedly composed of three independent directors: Mr. Domenico Barili, Luciano Silingardi and Paolo Sciumè[41]. The first is the marketing expert behind the campaign at the beginning of the Parmalat development (see chapter 2.1) and therefore strongly related to Mr. Tanzi. The second is a "friend from the high school" of Mr. Tanzi. Thanks to Parmalat founder's political ties, he became president of the Cassa di Risparmio di Parma and, of course, he then helped his mentor with financing using the bank funds. The third is a member of *comunione e liberazione*, a catholic lobby; he was directly invited by Mr. Tanzi to join the board of directors. The definition of independent directors in the case of Parmalat is therefore rather debatable and probably influenced by the nearly complete absence of institutional investors among the shareholders. The company also violated the Preda code in other aspects. For example, Parmalat did not establish any nomination committee with the justification that the shareholders never raised any issue in making the nominations. Another violation is the fact that Mr. Tanzi was chairman and CEO, a common practice in Italy that also violates the best practice code. It must be said that this behaviour is not illegal but it shows a limited commitment to best practice.

If Parmalat showed the limits of the Italian legislation on corporate governance, it worked also as an incentive to reform it; for example, a new law (Marzano law) was approved by the parliament[42]. The discussion on the legal aspect is beyond the targets of this paper. However, it must be said that the recent decriminalisation of the "accounting fraud" is not really in line with the request of increased transparency coming from the markets after the Parmalat scandal. A possible stimulus to improve the corporate governance standards should also come from the European Union: in fact, most European countries like France, Netherland or Germany suffered to different extents from lacks in corporate governance practice[43]. It is true that these deficiencies do not seem to handicap the performance of these countries. However, it is possible to believe that with such reforms the competitiveness of these countries would be increased and this in turn would reflect in even better results. This is especially true for Italy where, as said, institutional investor control is rather limited.

As a minor digression about the legislative setting, it is interesting to notice that in the 1990s new laws were passed to transform many Italian banks from public to private entities. The antitrust competence on banks was not given to the antitrust authority but to the Bank of Italy. In addition, in order to avoid that indebted entrepreneurs could acquire control of a bank with the aim of exploiting its financial resources, the eventual acquirer of a 5% stake in a bank needs the authorisation of the

[41] The names refer to the 2003 board.
[42] The law consists of a procedure aiming at restructuring big size firms (at least 300 employees and 300ml debt) once they get in financial distress.
[43]This is also proved by the scandals taking place in most European countries: Lernout & Hauspie in Belgium, Vivendi in France, Ahold in the Netherlands, Kirch in Germany and Skandia in Sweden.

central bank. Between 5% and 15% stake there exist 7 different thresholds that require the authorisation of the Bank of Italy and a higher stake is bylaw excluded. In addition, the decision of the Bank of Italy cannot be contested in court. This raises the question if Mr. Tanzi's decision to quote the firm is not also related to the increasing difficulties he probably encountered with the financing through banks as his political ties were no long effective and the banks were privatised.

5. Suggestions to analyst: the signals that should raise questions

This chapter is meant as a way to suggest some lessons that financial analysts can learn from Parmalat story. I aim at listing all the ringing bells that could have helped understanding the fraud in advance. The list must be taken *cum grano salis*, meaning that the possibility of one alarm bell ringing does not imply that the fire (i.e. fraud) is spreading. In order to be sure about fire, many bells must ring at the same time. In other words, each one of the following point is a warning signal but for every one there could be a good reason justifying the behaviour. However, it is difficult to believe that there exists a good reason for many of the following elements to take place at the same time.

1. Financial analysts should always consider the strategy and the business that drive the profits. Valuation goes hand in hand with strategic considerations. In Parmalat case it was well known that milk had low margins. In fact, many firms in this business were going bankrupt or became cheap acquisition targets. How come that Parmalat was so profitable in the very same business? There was no possible explanation for this huge difference. It must be said, however, in line with the previous reasoning, that one single alarm bell is not sufficient. It is, for example, possible to increase ROA not only increasing the margin but also increasing the turnover, which could partially justify the difference in performance.
2. The company should not be involved in too many expensive operations that do not take advantage of economies of scale. There usually is, for example, no need to have two accounting firms (Deloitte and Grand Thorton) auditing the company at the same time. This will only result in higher costs. Furthermore, the setting up of many (usually expensive) securitisation operations is in our opinion also a symptom of financial weakness at least.
3. Analysts should be aware that fast growth is very difficult to achieve because the aggregation of different companies through acquisitions requires time.
4. Analysts should always control that the debt reported in the balance sheet is equal to the amount of bonds circulating that can be found in Bloomberg or Reuters.
5. It would be useful to track the ratio between commercial credits (including RIBA and securitisations) and sales. This ratio should be considered in a time series and in a peer analysis setting. If some excessive fraudulent financing is generated through this channel, as

it was the case for Parmalat, the ratio is going to provide some hints about the real situation. Should the result of the ratio not be encouraging, it would be advisable to investigate on the influence of controlling shareholders on the licensed distributors of the company.

6. Financial analysts should also mistrust excessive cash. It is unclear why in ordinary economic times a company should retain big amounts of cash. It should either distribute it to shareholders or implementing positive NPV project and/or acquisitions. Indeed, in the case of Parmalat, the liquidity was inexistent or difficult to monetize. However, in the case of economic downturns, some firms could feel the need for some provisions. In addition, it must be said that many firms will justify their liquidity as needed to exploit eventual acquisition opportunities. Therefore, this alarm bell is not per se extremely indicative of a problem but considered together with others.
7. Big currency events must have an impact on the balance sheet. The devaluation of South American currencies had no impact on Parmalat balance sheet, although the company had a substantial South American branch. This should look suspicious, unless the company implemented a hedging strategy.
8. A reverse takeover in order to get listed on the stock exchange should raise suspicion and questions. It could be a diversion to avoid a proper market disclosure as it has been for Parmalat.
9. If firms do not comply with the best practice code of Corporate Governance, financial analysts should ask themselves why this is the case. It was the case for Parmalat that all controls were in the hands of people close to the controlling family. Independent directors must be *de facto* independent. It must be underlined that there exists no empirical evidence in academic papers about the impact of independent directors on positive performance. However, as explained earlier, the literature does not address the issue of independent directors in the setting of fraud. My personal opinion is that in this setting the presence of independent directors can have an impact at least on the extent and dynamic of the fraud.
10. Financial analysts and investors should pay attention if financial reports come from Banks that have strong business ties with the analysed company. As it seems to be the case for Parmalat, the stronger the ties the more optimistic the forecasting was.
11. The existence of a big number of offshore branches is not always related to tax reasons. Offshore companies are generated to hide the movement of capital and are pretty expensive to set up especially in terms of legal fees. New legislations make always more difficult (and therefore costly), especially after the financial crisis, to use them as a way to shield profits. Therefore, a big offshore structure is often unjustified, unless for siphoning and money misappropriation.
12. Eventual intra-group selling of (often overvalued) brands and subsidiaries is surely an alarm

bell. It is a way to fictitiously increase earnings. It must be said that it is very difficult to find out about these operations in the consolidated balance sheet because it is often the case that, when such operations take place, they are not clearly reported. In addition, eventual reorganisations projects could justify these operations. However, if this is the case, some clear cost advantages should result from the operation.

13. The analyst should try to figure out where the liquidity of the company is deposited. It is a very negative signal if the money is concentrated on a unique bank account. In fact, not only could the account be the result of a fraud, as in the case of Parmalat, but the eventual bankruptcy of the bank, in which the money is deposited, could put at risk the solvency of the firm due to the time required for the bankruptcy procedures. In addition, if the company pays so little attention to its liquidity it is possible that other risk management issues exist.

6. Epilogue: Bondi's successful turnaround

Parmalat fraud generated a gigantic trial: the Milanese public prosecutor's office took care of the the crimes related to agiotage, fake disclosures to the market and to the auditors, impediment to the controlling functions of Consob; while Parma public persecutor's office was responsible for bankruptcy and conspiracy crime. Just to give a feeling about the numbers, in the preliminary auditions in Milan 15000 people brought a civil action in the criminal proceeding. These meant that two hours and a half were needed to call over the roll. In the following trial the number of actions rose to 50000 people. In the last grade of judgement Mr. Tanzi was sentenced about 8 years. In the main trial in Parma, Mr. Tanzi was sentenced about 18 years and Mr. Tonna about 10. In the second grade of judgment, the sentence was substantially confirmed (respectively 17 years and 10 months and 9 years and 9 months) [44]. Citigroup, Deutsche bank, Morgan Stanley, Bank of America and Credit Suisse were discharged from the agiotage accusation by the judges in Milan. UBS and Nextra plea-bargain before the end of the process. However, many banks are still under trial in Parma with the accusation of supporting Mr. Tanzi in the criminal bankruptcy.

Mr. Bondi was successful in restructuring the company. Among his first steps he sued many banks in order to generate some liquidity: targets include J.P. Morgan Chase, Credit Suisse First Boston, Deutsche Bank and Bank of America. The requested money reached the monstrous amount of $10bn. In the end, according to Prof. Zingales's reported value, Parmalat was able to recollect more than 1.5bn euro from trials. The reason why the banks paid was to avoid that the milk company asked to bring a civil action in the criminal proceedings, which see the banks accused of helping Mr. Tanzi in the bankruptcy fraud. Mr. Bondi also divested the subsidiaries in US, Latin America and Asia

[44] The trial has reached the second grade of judgment and the sentence related to the last grade must still be released.

mostly focusing on Italy and Canada[45]. He also sold some non-core businesses like the bakery products (brands Grisbi and Mr.day). Finally, the workforce was slashed by half to about 17000 employees.

Under Bondi's administration, in about 7 years, the company was able to reach a profit of €282mn euro, €4.3bn revenues and liquidity for about €1.34bn (2010 figures). In 2001, Parmalat was acquired by Lactalis. The board was reshaped after the acquisition and Bondi left the company. It is legendary the fact that he arrived with a Fiat Punto and left the company driving a Fiat Panda. In my opinion and in line with Prof. Zingales' reasoning, if Mr. Bondi was excellent in the restructuring phase, his performance was not so great in the following development of the company. He was slow in geographical and product diversification that would have been a good strategy giving the declining profits and the problems with UHT milk margins. In addition, he did not use the strong liquidity available neither to remunerate capital nor to diversify.

7. Conclusion

The managerial inability of Mr. Tanzi to make Parmalat digest the huge number of acquisitions and the excessive paid premium, the low margins of the business in which the company was involved, the siphoning and the empire building attitude of the founder were the main elements justifying the collapse of Parmalat.

One of the main questions that I have asked myself concerns the reasons why Mr. Tanzi set up in the first place what recalls a huge Ponzi scheme that had its engine in leverage and asset growth. He could have surely stopped this mechanics in the first decade when the company was still successful and profitable. Of course I do not have a definitive answer on this point but I think that he followed at the beginning of his management experience an empire building strategy: he probably believed that a bigger size company implied more power. He probably tought that his political ties could have helped him to stop the running Ponzi cycle at a later stage, which then proved impossible. In fact, he was trapped in the system that he had generated and, very likely, he could not find a solution anymore. The fact that Mr. Bondi was successful in restructuring the company in a few years proves that the company was not so unprofitable as the fraud could make the investors believe. Of course, the good performance of post-Tanzi Parmalat was possible only after removing a big amount of debt from the shoulders of the company and after receiving some liquidity as compensation from the sued banks and accounting firms. However, in my opinion the good performance of the company proves that Mr. Tanzi's main mistake consisted in increasing the leverage too much in the first place. The political system that helped him to stay afloat and to collect fresh money, however, shares with

[45]Some subsidiaries in Europe and in Australia were also retained.

him the responsibility for the bankruptcy. These aspects of what Prof. Zingales calls *capitalismo di relazione* (relational capitalism) is one of the biggest problems that the Italian economy needs to address and, in my opinion, it finds in Parmalat a wonderful example of its long term consequence. It must also be said that I share the view of Mrs. Chiaruttini about the fact that Parmalat is not only an Italian event: without some support from the (national and international) financial system, Mr. Tanzi would not have been able to realise the fraud or this would have been detected at a very early stage.

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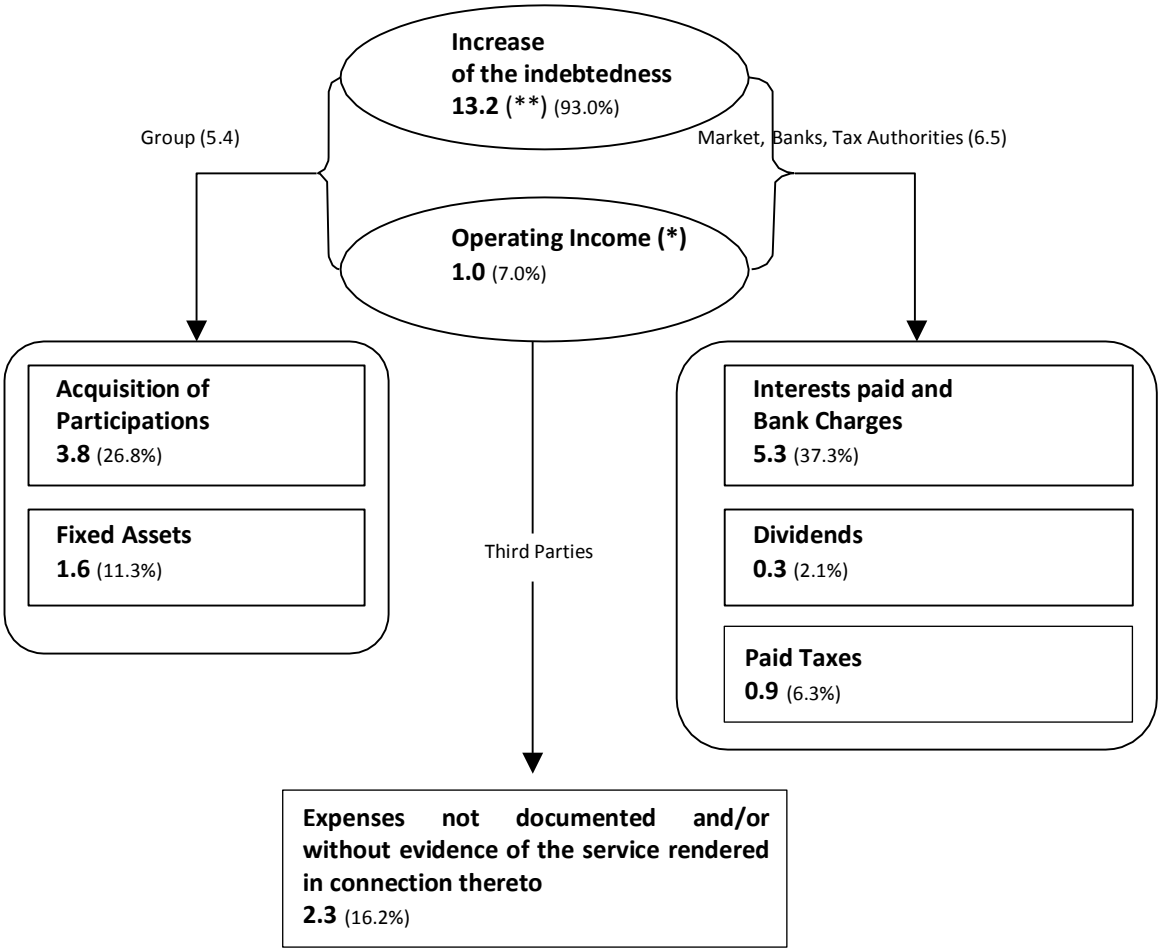
Wall Street Journal Europe, February 16, 2004, Official at Parmalat's Brazil Unit Resigns After Judge's Orders.

Parmalat website: http://www.parmalat.com/it/investor_relations/contenzioso/

Exhibit 1: The grounds for the insolvency



(*)Estimated Data

(**) The difference between this value and the value indicated in the press release of January 26, 2004 is represented by the amounts reclassified in other voices of the statement of assets and liabilities, for the purposes of this representation.

Source: Extraordinary Commissioner's report

Exhibit 2: Most relevant people in the Parmalat fraud

- **Fausto Tonna**. He is Tanzi's right hand and CFO for almost the entire life of the company. He started his carrer at Parmalat in 1972 due to his personal relation with Mr. Tanzi. In fact, they attended the same high school in accounting (together with Gorreri and Silingardi). He is irascible, introvert and used to have incredible working hours according to his collaborators. In the '90s he becomes the president of Coloniale, the family holding.

- **Luciano del Soldato.** He had a carrer in Parmalt. When Tonna resigned, Del Soldato took part of his tasks becoming administrative director.

- **Alberto Ferraris.** He worked in Citigroup and then became CFO when Tonna resigned.

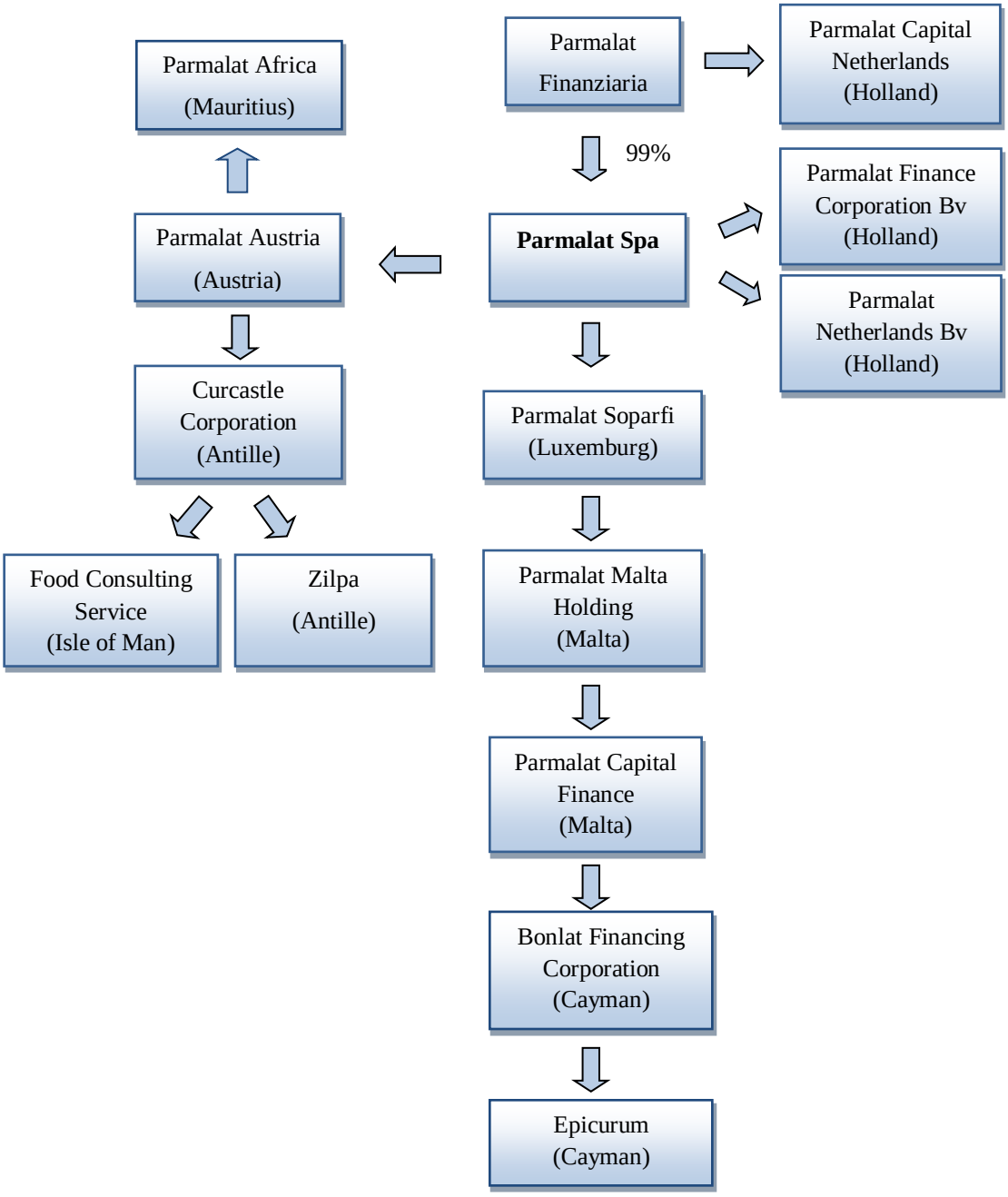
- **Franco Gorreri**. He attended the technical high school "Meloni" too. He was mayor of Collecchio for one year. He joined Parmalat in 1979 as office worker. In '87 he was appointed head of treasury. But his career turned in 1992 when, thanks to the political ties of Tanzi, he was appointed president of Banca del Monte di Parma (a local public owned bank). He was nominated vice-president of Parma football club.

- **Domenico Barilli**. He started his career at Parmalat as early as 1963. He was the marketing expert for 40 years and his contribution to the success of the company was determining at the beginning of Parmalat history.

- **Giampaolo Zini**. He is the mind behind the legal issues, especially those related to the offshore companies. He opened a huge office in New York and owns his professional success to Mr. Tanzi.

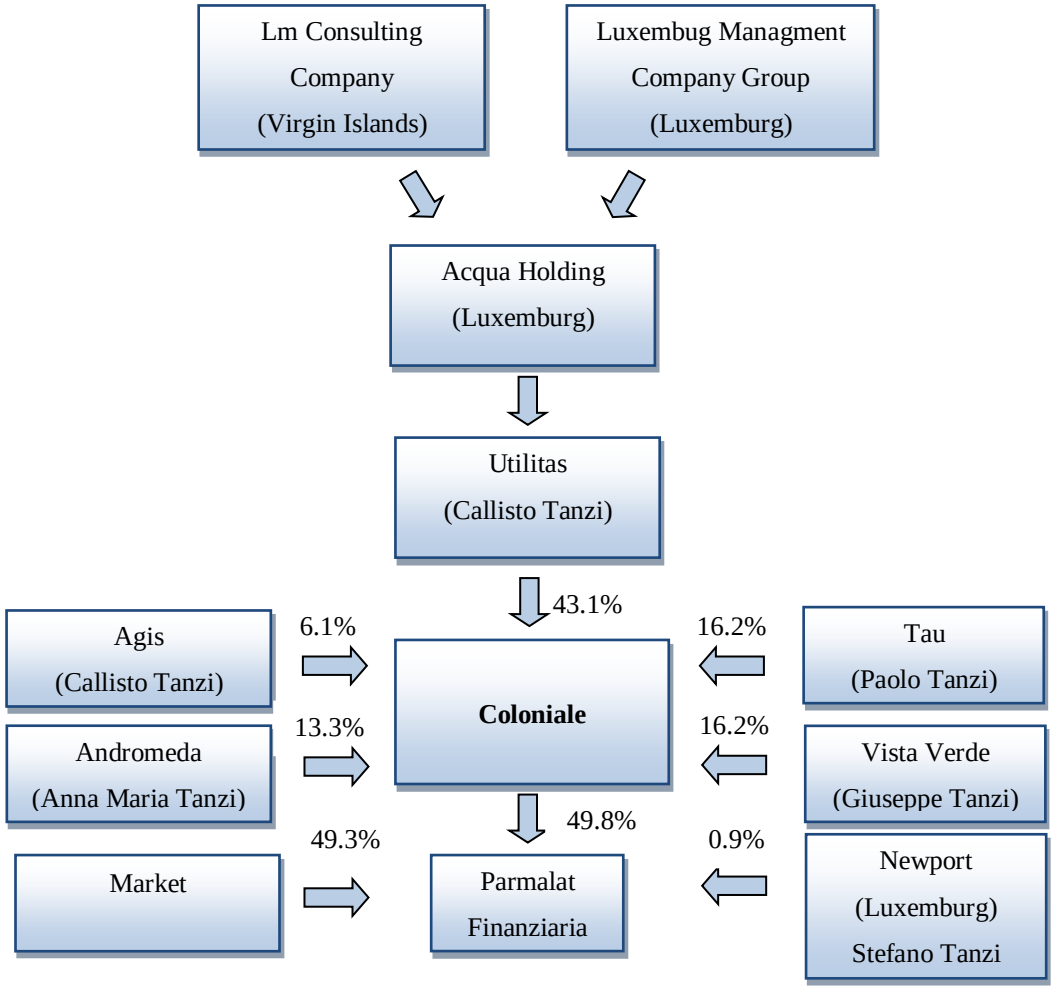
- **Luciano Silingardi**. He is a "friend of the high school". Thanks to Tanzi political ties he became president of the Cassa di risparmio di Parma and of course he helped his mentor with the financing. He joined also the board of Parmalat between 2001 and 2003 as non-executive director.
- **Gianfranco Bocchi**. He is the bookkeeper and Tonna's assistant. He contributed to the realization of the false Bank of America account documentation.

Exhibit 3: The offshore financial structure



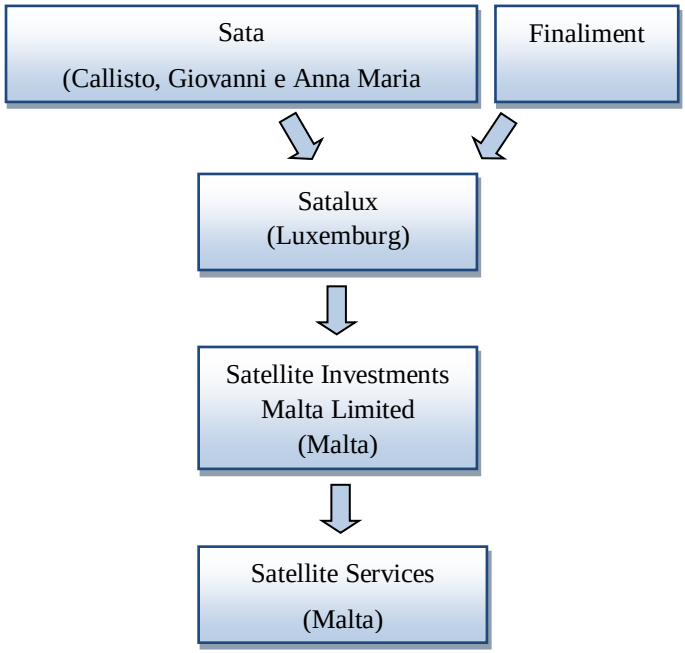
Source: Gabriele Franzini (2004) e Vittorio Malagutti (2004)

Exhibith 4: The Tanzi family holding



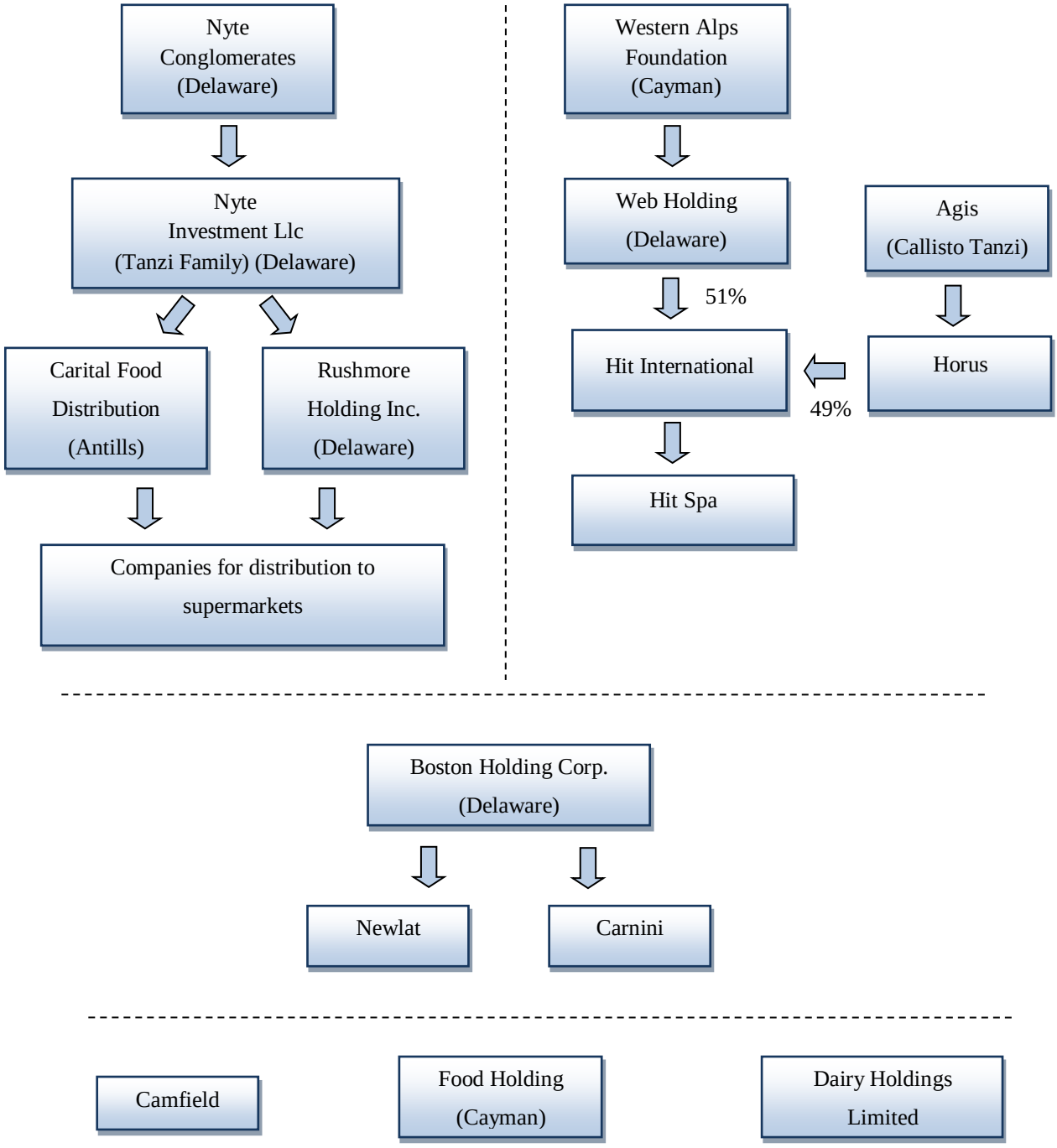
Source: Gabriele Franzini (2004) e Vittorio Malagutti (2004)

Exibith 5: Other family offshore companies



Source: Self elaboration of Gabriele Franzini (2004)'s and Mrs. Toninato and Prof. Tapies (2005)'s graphs

Exibith 6: The hidden Parmalat



Source: Graph as reported by Gabriele Franzini (2004) with some minor improvements

Exhibit 7: Financial statement 2003 (reclassified)

PARMALAT GROUP
RECLASSIFIED CONSOLIDATED BALANCE SHEET
(in thousands of euros)

		2003 fiscal year
A	FIXED ASSETS	
	Intangible	831,668
	Tangible	1,249,545
	Long-term investments	233,916
		2,315,129
B	NET WORKING CAPITAL	
	Inventories	482,896
	Trade accounts receivable	1,124,108
	Other assets	100,942
	Trade accounts payable (-)	(1,000,525)
	Reserves for risks and charges (-)	(584,320)
	Other liabilities (-)	(556,001)
		(432,899)
C	INVESTED CAPITAL, NET OF OPERATING LIABILITIES (A+B)	**1,882,230**
D	RESERVE FOR EMPLOYEE SEVERANCE INDEMNITIES AND OTHER RESERVES FOR RISKS (-)	**(59,120)**
	RESERVES FOR EXTRAORDINARY RISKS AND CHARGES (-)	**(1,433,093)**
		(1,492,213)
E	NET INVESTED CAPITAL (C-D)	**390,017**
	Covered by:	
F	NET WORTH	**(13,140,382)**
G	NET BORROWINGS (FINANCIAL AVAILABILITIES)	
	Loans payable to banks and other lenders	13,713,683
	Loans payable to Group companies	0
	Loans receivable from Group companies (-)	
	Other financial assets (-)	(82,810)
	Liquid assets (-)	(100,474)
	Total net borrowings	**13,530,399**
H	TOTAL COVERAGE SOURCES (F+G)	**390,017**

PARMALAT GROUP
RECLASSIFIED CONSOLIDATED STATEMENT OF INCOME
(in thousands of euros)

		2003 fiscal year
A	SALES REVENUES	5,654,838
	Other revenues and income	72,033
	Total net revenues	5,726,871
	Change in inventory of work in progress, semifinshed goods and finished goods	15,177
B	PRODUCTION VALUE	**5,742,048**
	Raw materials and outside services (-)	(4,815,718)
	Miscellaneous costs(-)	(68,321)
	Provisions for risks and charges (-)	(325,651)
C	VALUE ADDED	**532,358**
	Labor costs (-)	(773,006)
D	EBITDA	**(240,649)**
	Depreciation, amortization and writedowns (-)	(1,571,267)
E	EBIT	**(1,811,916)**
	Net financial expense	(1,152,644)
	Dividends and tax credits	40,849
	Upward value adjustments (Writedowns) of financial assets	(1,030,241)
F	LOSS BEFORE EXTRAORDINARY ITEMS AND TAXES	**(3,953,952)**
	Extraordinary income (expense) and extraordinary provisions for risks	(11,397,425)
G	LOSS BEFORE TAXES	**(15,351,377)**
	Income taxes	140,831
I	NET LOSS	**(15,210,546)**

Source: Restructuring plan developed by Mr. Bondi (Extraordinary Commissioner), March 2004

Exhibit 8: bond emissions

Foreign financial institutions	Issuer	Date	Nominal Value in Euro/000
Bank of Boston corp.	Parmalat Partecipacoes do Brazil	1997/January 2005 in dollars	**136.282**
Barclays Capital	Parmalat Capital Finance	1998/August 2008 in dollars	**429.877**
Bear Stearns International Ltd	Parmalat Finance Corporation BV	June 1999/June 2004	**100.000**
JPMORGAN CHASE			
Chase Investment Bank	Parmalat Finance Corporation BV	July 1996/put July 1999 L/Mld 500	258.228
Chase Manhattan Bank NA	Parmalat Finance Corporation BV	December 1999/2002	325.000
	Parmalat Finance Corporation BV	February 2000/December 2002	75.000
Chase Manhattan International Ltd	Parmalat Finance Corporation BV	June 1997/2001	335.697
	Parmalat Finance Corporation BV	Feb. 1998/Feb. 2028 zero coupon	61.975
	Parmalat Finance Corporation BV	June 1999/June 2004	100.000
	Parmalat Finance Corporation BV	February 2000/February 2005	500.000
	Parmalat Finance Corporation BV	March 2000/February 2005	150.000
	Parmalat Finance Corporation BV	October 2000/October 2007	150.000
Morgan Stanley & Co International	Parmalat Finance Corporation BV	10 July 2003/2008	300.000
	Parmalat Food Corporation BV	December 1995/2000	181.709
	Parmalat Soparfi	May 2002/2032	306.800
	Parmalat Soparfi	December 2002/20022 zero coupon	246.400
JP Morgan Securities Ltd	Parmalat Finance Corporation BV	April 1998/April 2005	500.000
	Parmalat Finance Corporation BV	February 2001/February 2006	500.000
	Parmalat Partecipacoes do Brazil	1997/February 2005	59.393
	Parmalat Partecipacoes do Brazil	1997/March 2005	59.393
	Totale		**4.109.595**
Credit Suisse First Boston	Parmalat Finance Corporation BV	January 2002/January 2007	250.000
	Parmalat Finance Corporation BV	February 2002/January 2007	50.000
	Parmalat Partecipacoes do Brazil	2002/February 2008	245.000
	Totale		**545.000**
Deutsche Bank AG	Parmalat Finance Corporation BV	10 September 2003/2010	**350.000**
HSBC Warburg	Parmalat Food Corporation BV	December 1995/2000	**181.709**
Merrill Lynch International	Parmalat Capital Finance	1997/December 2049	77.469
	Parmalat Capital Finance	1997/December 2049 in dollars	90.855
	Parmalat Capital Finance	1997/December 2049 in pounds	150.446
	Parmalat Capital Finance	1998/December 2049	125.000
	Parmalat Capital Finance	1998/December 2049	25.823
	Parmalat Finance Corporation BV	March 1999/March 2009	300.000
	Parmalat Finance Corporation BV	September 1999/March 2009	90.000
	Parmalat Finance Corporation BV	June 1999/June 2009	100.000
	Totale		**959.593**
Nomura Int. Plc.	Parmalat Finance Corporation BV	September 2001/September 2004	100.000
	Parmalat Finance Corporation BV	February 2002/September 2004	50.000
	Totale		**150.000**
Paimewebber international LTD	Parmalat Food Corporation BV	December 1995/2000	**181.709**
Paribas London	Parmalat Capital Netherland BV	March 1998/December 2005	281.200
	Parmalat Finance Corporation BV	April 1998/April 2005	500.000
	Totale		**781.200**
Salomon Brothers International Ltd	Parmalat Capital Netherland BV	February 2001/June 2021	**350.000**
UBS Limited	Parmalat Finanziaria spa	January 1997/2007 1st emission	103.292
	Parmalat Finanziaria spa	October 1997/2007 2nd emission	103.291
	Parmalat Finanziaria spa	February 1998/2010	51.646
	Parmalat Finance Corporation BV	3 July 2003/2008 (1)	210.000
	Parmalat Finance Corporation BV	3 July 2003/2008 (2)	210.000
	Totale		**678.229**

Italian Financial Istitutions	Issuer	Date	Nominal Value in Euro/000
GRUPPO MPS - MPS Finance	Parmalat Finance Corporation BV	January 2002/January 2007	250.000
	Parmalat Finance Corporation BV	February 2002/January 2007 extended	50.000
	Totale		**300.000**
GRUPPO BPM - Banca Akros spa	Parmalat Finance Corporation BV	January 2002/January 2007	250.000
	Parmalat Finance Corporation BV	February 2002/January 2007 extended	50.000
	Totale		**300.000**
BANCA INTESA Banca Commerciale Italiana	Parmalat Finanziaria spa	March 1996/April 2003	103.291
Caboto Sim spa	Parmalat Finance Corporation BV	January 2000/December 2003	
	Parmalat Finance Corporation BV	January 2000/December 2003 extended	150.000
	Parmalat Finance Corporation BV	July 2001/July 2008	500.000
	Totale		**753.291**
GRUPPO SAN PAOLO - IMI			
Banca d'Intermediazione	Parmalat Finance Corporation BV	December 1999/2002	325.000
	Parmalat Finance Corporation BV	February 2000/December 2002	75.000
	Parmalat Finance Corporation BV	February 2000/February 2005	500.000
	Parmalat Finance Corporation BV	March 2000/February 2005 extended	150.000
	Parmalat Finance Corporation BV	October 2000/October 2007	150.000
	Parmalat Finance Corporation BV	February 2001/February 2006	500.000
	Totale		**1.700.000**
GRUPPO UNICREDIT Banca Mobiliare spa	Parmalat Finance Corporation BV	January 2002/January 2007	250.000
	Parmalat Finance Corporation BV	February 2002/January 2007 exteded	50.000
Credito Italiano	Parmalat Finance Corporation BV	July 1996/put July 1999 L	258.228
	Parmalat Finance Corporation BV	June 1997/2001	335.697
Unicredito Italiano spa	Parmalat Finance Corporation BV	June 1999/June 2004	100.000
	Parmalat Finance Corporation BV	August 1999/August 2009	25.000
	Parmalat Finance Corporation BV	July 2001/July 2008	500.000
	Parmalat Finance Corporation BV	December 2002/December 2004	15.000
	Totale		**1.533.925**

Source: Chiaruttini (2004)

Do Stock Market Valuations Reflect Managerial Honesty?

Lorenzo Brandi, Rajna Gibson and Alexander F. Wagner *

July 23, 2013

Abstract

Firms with high accrual-based earnings management but low CEO incentives to engage in earnings management exhibit high excess returns (alphas), whereas firms with low earnings management despite high CEO incentives exhibit low alphas. This evidence suggests that the market assigns higher market values (and, therefore, lower future returns) to firms whose CEOs are committed to telling the truth (avoiding earnings management) even when it is personally very costly. After the introduction of the Sarbanes-Oxley Act, these differences decrease substantially, suggesting that investors perceive this regulation as a substitute to market discipline, thus reducing the inferences regarding managerial honesty that can be drawn from earnings management in the presence of financial incentives.

JEL-code: G02, G39

Keywords: Earnings management, CEO incentives, Honesty, Sarbanes-Oxley Act.

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1 Introduction

Strong personal ethical foundations are sometimes seen as a desirable quality in their own right, but many observers worry that ethical commitments may be at odds with the requirements for economic success. Nonetheless, recent work suggests that ethical orientations can also be helpful to succeed in life, even in competitive environments. For example, Frank (2004) argues that success can be had without "selling one's soul" because a commitment to principle makes economic agents more reliable and, thus, attractive as trading partners.

In this paper, we study a particular facet of this idea. Specifically, we focus on CEOs, and we consider one important ethical dimension along which CEOs arguably differ: their commitment to truthfulness.[1] CEOs may have preferences of truthfulness per se (independent of the consequences of their actions), that make them experience an intrinsic (moral or psychological) cost of lying. The market may see benefits of such a preference for truthfulness for two reasons. First, agency costs may be lower, as honest CEOs are more likely to report the truth about the value of investment projects and resource allocation opportunities. Second, an honest CEO may be particularly trustworthy, which is a valuable characteristic as asymmetric information and (lack of) credibility can imply that investors demand significant risk premia when providing capital. If truthfulness of the CEO reduces information risk (and this is not a diversifiable risk and, therefore, a priced risk factor), cost of equity capital is likely lower.[2] Firms that have a reputation of honesty (due to the qualities of their CEO) may also be benefiting from more credibility from their suppliers and customers (and other

[1] The CEO arguably plays a particularly important role in setting the tone for decisions in the company and in recruiting other management committee members.

[2] See, e.g., Easley and O'Hara (2004), Merton (1987). Newer work questions the relevance of information risk as a risk factor (Hughes, Liu and Liu 2007; Lambert, Leuz and Verrecchia 2007; Armstrong, Banerjee and Corona 2013).

stakeholders) that turns into a higher and more stable profitability and, thus, shareholder value.

These considerations suggest the *market value of honesty hypothesis*: firms led by managers whom the market believes to be committed to truthfulness enjoy higher valuations and lower costs of equity capital. In this paper, we are interested in whether shareholders are able to identify, appreciate and reward this characteristic of managerial honesty.[3]

We investigate the market value of honesty hypothesis by studying differences in firm valuations as related to their accrual-based (accounting) earnings management (henceforth referred to as earnings management). Healy and Wahlen (1999) note that earnings management occurs "when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers". Of course, this is not to say that *all* of earnings management is dishonest, but it appears plausible to allow for the possibility that a fraction of earnings management is rooted in dishonesty.[4]

[3] Some trust can be won by behaving strategically and by finding appropriate ways to communicate with shareholders (Lev (2012)). In this paper, we focus on innate characteristics of the CEO, which are reflected in decisions from which investors infer the CEO's commitment to truthfulness. We assume that inferences investors draw for the CEO are representative for the entire executive management of a company.

[4] Specifically, there are reasons why earnings management can also be in the interest of shareholders and may be something that a CEO loyal to shareholders finds the right thing to do. For example, smoothing earnings could be in the interest of the existing shareholders. We assume that while there are non-lying related reasons to engage in earnings management (including different preferences for different styles of corporate management that may have to do with a CEO's educational background, for example), these reasons are uncorrelated with the CEO's innate preferences for truthfulness. This appears to be a reasonable assumption. For example, Gibson, Tanner, and Wagner (2013) find that their measure of preferences for truthfulness (protected values, PV) is uncorrelated with age, gender, or program of studies.

We measure earnings management by considering the discretionary accruals a firm creates in a given year.[5]

To evaluate how the market prices information about earnings management, we employ a standard portfolio-based approach (see, for example, Barth, Konchitchki and Landsman (2011)). We consider a set of large, well-known firms (essentially the Standard & Poor's 1500). For these firms, efficient pricing is a plausible assumption, that is, stock market valuations immediately and accurately reflect the characteristics of these firms. Under our hypothesis, the market assigns higher valuations to firms with more truthful CEOs. Higher market valuations, in turn, imply lower future excess returns (or alpha, beyond what is predicted by asset pricing models, such as the Fama and French (1992) or Carhart (1997) models).[6] Therefore, the central test we conduct is whether alpha is decreasing in managerial honesty.

Our main analysis of this hypothesis proceeds in three steps, employing a revealed preferences argument:

First, we note that if CEOs also experience intrinsic costs of lying, but to different extents (Gibson, Tanner and Wagner (2013); Gneezy (2005)), then those with strong preferences for truthfulness will engage in less earnings management. Consistent with the hypothesis, and providing a baseline result, we document that firms with high discretionary accruals have higher future excess returns (lower valuations) than those with low discretionary accruals.

[5] The accrual anomaly (Sloan 1996) concerns the fact that companies with small total accruals outperform companies with large ones. Considering discretionary accruals takes into account the fact that industry, size, profitability, and other firm characteristics explain a "normal" amount of accruals. Only "abnormal," discretionary accruals are informative of a potential dishonest element.

[6] By contrast, if the market does to not reflect company characteristics in share prices quickly, valuable characteristics would be associated with higher future returns. The existant literature documents that for large firms, news are much more quickly reflected in asset prices than for small firms (e.g., Hong and Stein (1999), Peng (2005), and Hou and Moskowitz (2005)).

Second, we note that in addition to innate preferences for truthfulness, financial incentives are likely to matter. Indeed, standard economic theory predicts that extrinsic incentives to lie play a role in determining agent's choices to report the truth. Relevant to our context, for example, Bergstresser and Philippon (2006) document that CEOs with strong incentives to increase the stock price manage earnings more. Therefore, CEOs who do not lie despite having significant incentives to do so should be perceived, everything else equal, as strongly committed to truthfulness, whereas those who do lie although the monetary incentives for doing so are not strong should be perceived as deeply opportunistic.

Directly confirming this idea, our central result is that a particularly pronounced difference exists between high-earnings management, low incentives firms and low-earnings management, high incentives firms. The former have much higher future excess returns than the latter; the difference is on the order of 150 basis points per month. This finding supports St. Augustine's saying: "*Every lie is a sin, but it makes a great difference for what purpose one lies*." That is, by managing earnings, the CEO lies, but low earnings management despite high incentives to do so is much more acceptable to the market than high earnings management in the presence of low incentives to do so.

Third, we recognize that there are alternative interpretations of this main result. In particular, as is the case in all papers that consider portfolio sorts, a basic concern is that we may not have used the correct asset-pricing model; we are testing a joint hypothesis. However, an additional result reduces this concern. We consider the introduction of the Sarbanes-Oxley Act (SOX) as a natural experiment. The returns differences are particularly significant in the period before SOX came into place. This is consistent with the idea that SOX and its

concomitant regulations (requiring managers to sign financial statements and enhancing the required independence of the audit committee and the external auditor, among other things) led to more responsible CEO behavior. Thus, whatever earnings management was done after SOX was in place was probably less due to preferences (or the lack thereof) for truthfulness, making it less informative about these preferences. Under the alternative hypothesis of a misspecified asset pricing model, this change would not be expected; there is no reason why the SOX act should lead to an improvement of the performance of the asset pricing model we use.[7]

Overall, we interpret the findings as providing evidence that the market assigns higher valuations to firms with CEOs who have revealed, through past actions, their preferences for truthfulness.

The paper is organized as follows. Section 2 discusses the related literature. Section 3 develops the theoretical background. Section 4 describes the data and the empirical strategy. Section 5 presents the results. Section 6 provides additional results and robustness checks. Section 7 concludes.

2 Related literature

Our paper is related to several strands of the literature. First, the study adds to the emerging literature on the role of managerial characteristics (Bertrand and Schoar 2003; Graham, Harvey, and Puri 2012). This literature has shown that manager fixed effects can explain significant variation in corporate policies, and that there

[7] A different interpretation of our main result – that alpha is decreasing in managerial honesty – arises if the market does not, in fact, price in all in principle available information today. In that case, our result would mean that the market actually values opportunistic, dishonest CEOs more than "strictly" honest CEOs. (For example, Gompers, Ishii and Metrick (2003) find that firms with good governance had higher alphas in their sample. They argue that, in the sample period they study, the market did not efficiently price differences in the quality of corporate governance between firms.) We think it is unlikely that the large firms that make up our sample are subject to such inefficient pricing.

is great heterogeneity among managers. What we add is the insight that investors can benefit from making investment decisions based on an important manager-specific characteristic, her or his commitment to truthfulness.

Second, this paper extends work on transparency and credibility of companies. Existing work (Botosan 1997, Francis, Nanda and Olsson 2008, Barth, Konchitchki, and Landsman 2011, and many others) considers characteristics of companies (such as the extent of voluntary disclosure quality, or the quality of earnings), but does not study managerial characteristics as an important concurrent dimension. While this literature by and large finds that transparency decreases cost of capital (incremental to the standard risk factors), we add the idea that the extent of this benefit depends critically on what the market believes regarding the motives of management to engage in acts of honest or less honest actions.

Third, this paper is related to the broader literature on corporate (social) responsibility. Most of that literature considers company characteristics as signaling or conveying information regarding the values held by the company and its representatives. The large literature has not come to unambiguous conclusions: Many studies find zero effect (Hamilton, Jo and Statman 1993, Bauer, Koedijk, and Otten 2005, Statman and Glushkov 2008). A relatively small number of studies finds social responsibility screen that works for investors. For example, Edmans (2011) documents that investing in the "best companies to work for in America" does yield significantly positive alphas. His interpretation is that the stock market does not fully value intangibles. Several studies find a negative relationship effect of socially responsible investing (Geczy, Stambaugh and Levin

2005, Renneboog, ter Horst, and Zhang 2008, Hong and Kacperczyk 2009).[8] For example, Hong and Kacperczyk (2009) find that "sin stocks" have higher excess returns (and lower valuations) than otherwise comparable stocks. Our work yields results that have a similar flavor as the latter paper, but it instead emphasizes the individual dimension, that is, *managerial* responsibility (rooted in honesty). Much like sin stocks may subject shareholders to higher litigation risk and may keep some "norms-oriented" investors from investing in them, firms with "sinful," dishonest CEOs have lower valuations because they are shunned by at least some investors. The natural experiment of the Sarbanes-Oxley Act lends additional support to this interpretation.

3 Theoretical background

A central theme of our paper is that CEOs have heterogeneous preferences for truthfulness. This idea has been suggested by a number of papers especially in the experimental literature, e.g., Gneezy (2005) and Gibson, Tanner and Wagner (2013) (GTW). For example, GTW show that the following simple preference specification does a good job in explaining (experimental) data on truthfulness choices. They consider an agent who decides whether to tell the truth, *T=1*, or to manage earnings / lie, *T=0*. (In practice, earnings management is a matter of degree, and the basic intuition holds for the continuous case, too.) Lying, the agent receives a certain income *m*. There are **E**conomic **C**osts **O**f **S**tating the **T**ruth, for which we use the term *ECOST*. (This is the equivalent of the incentives of the CEO to manage earnings, as documented by Bergstresser and Philippon 2006). The agent receives funds *m-ECOST* when he does not manage earnings.

[8] Indeed, modern portfolio theory (e.g., Markowitz, 1959) suggests that any social responsibility screen reduces returns, since it restricts an investor's choice set.

GTW model preferences for truthfulness by positing that the agent also experiences total costs of lying, C_i (which could be driven moral concern, for example). Let the global utility function be defined as

$$V_i(T) = \begin{cases} b(m - ECOST) & \text{if } T = 1 \\ bm - C_i & \text{if } T = 0 \end{cases} \quad (1)$$

where *T* is the choice variable. The difference between the utilities of truthtelling and of lying is given by

$$Y_i^* = C_i - bECOST. \quad (2)$$

An individual exhibits truthfulness when $Y_i^* > 0$.

This model yields two simple predictions for our purposes here that allow us to test the market value of honesty hypothesis:

First, CEOs with stronger preferences for truthfulness will lie less. The extent of earnings management thus inversely proxies for a CEO's intrinsic costs of lying.

Second, the higher the individuals intrinsic costs of lying are, the less likely a CEO is to lie even in the face of high *ECOST*. Concretely, we posit that the joint observation of the incentives to manage earnings and the extent of earnings management contains fine information on the market's perception regarding the CEO's commitment to truthfulness.

4 Data and empirical strategy

Our study focuses on the risk-adjusted returns that firms characterized by certain combinations of earnings management levels and managerial incentives to engage in earnings management generate. We discuss these measures in turn.

4.1 Sample

Our sample consists of all the firms contained in the CCM (Crsp/Compustat Merged Database). The sample period for company data in our main analysis is 1993 to 2006. We took care of inflation related concerns using the CPI provided by the US Department of Labor.[9] In addition, all the variables, with which the accruals are computed are winsorized at the 0.025 level on both tails. Finally, we deleted all observations related to financial, real estate, transport companies and public utilities, given the peculiarities of these industries.

4.2 Variables

4.2.1 Earnings management (EM) and discretionary accruals (DA)

There is no uniquely preferred methodology regarding the way EM should be calculated. The general idea, however, is common to most approaches: A company engages in earnings management if it uses accruals to an extent not normally justified by the circumstances. For example, a certain degree of the usage of accruals is normal in order to align sales and cash flows. Firms with higher revenue growth will automatically have higher accruals, but of course it would be wrong to conclude that managers of firms with high revenue growth are dishonest. Rather, only accruals beyond normal accruals – that is, *discretionary* accruals – indicate earnings management.

Differences in methodologies arise in terms of (a) calculating accruals and (b) estimating what the normal accruals are.

As the primary approach, following the reasoning of Bergman and Jenter (2007), we use the Hribar and Collins (2002) approach, which relies on cash flow data. The discretionary accruals (DA) generated with this methodology are

[9] Source: ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt

identified in our paper with the acronym DA-CF. Hribar and Collins (2002) in particular address the problem of measuring earning management around non-operating events, as for example, mergers, acquisitions, divestitures and foreign currency translations. They argue that there are biases generated by these events on the underlying variables (as for example net current assets). Their solution is to use variables taken from the cash-flow statement (also available in Compustat) instead of balance sheet data in order to calculate total accruals. Specifically, Hribar and Collins (2002) calculate the total accruals in the following way:

$$TA_{i,t}^{cf} = \frac{IBC_{i,t} - CFO_{i,t}}{A_{i,t-1}} \quad (1)$$

Where:

$IBC_{i,t}$= earnings before extraordinary items and discontinued operations

$CFO_{i,t}$=operating cash flows from continuing operations (Compustat (oancf-xidoc))

In the second step weuse a regression approach to identify the non-discretionary and discretionary accruals. As mentioned earlier, the main point of this second step is to remove the part of accruals that cannot be controlled by the CEO and therefore determine the part of the accruals that are willingly manipulated by the CEO. Specifically, we estimate

$$TA_{i,t} = \beta_0 + \beta_1\left(\frac{1}{A_{i,t-1}}\right) + \beta_2\left(\frac{\Delta REV_{i,t}}{A_{i,t-1}}\right) + \sum_{year} y + \sum_{industry} i + \varepsilon_{i,t} \quad (2)$$

Where:

$\Delta REV_{i,t}$=change in revenues for firm i at time t (Compustat variable sales).

This equation takes into account year and industry fixed effects, following Bergstresser and Philippon (2006).[10] As pointed out by Jones (1995), all variables in the accruals expectations model are scaled by lagged assets to reduce heteroscedasticity.

The discretionary accruals then are the residuals of this regression.

We also repeat each analysis using the Dechow, Sloan and Sweeney (1995) approach, and we find similar although less significant results. (See the robustness section.)

4.2.2 Incentive ratio (IR)

The granting of options and shares to the CEO allows us to identify a measure of the incentive that the CEO has to manage earnings (Bergstresser and Philippon 2006).

The incentive ratio (IR) aims at evaluating the impact of a one percent change in the price of the underlying share on the overall remuneration of the CEO, which is given by the options and shares granted plus salary. We follow the methodology described by Bergstresser and Philippon (2006) that is in turn based on the approximation used by Core and Guay (2002). Thus, we estimate the value and sensitivities of an option portfolio through the aggregation of three groups of options: newly granted options, previously granted unexercisable options and previously granted exercisable options. All the variables were taken from Compustat Executive Compensation, while the annualized volatilities (of daily log returns), which are needed in the Black and Scholes formula, are calculated using

[10] There exists a second methodology to compute the DA that was developed by Hribar and Collins (2002) and whose results we did not report. Here, current accruals are calculated using only the change in the non cash working capital accounts. As clarified by Hribar and Collins (2002), the total accruals measure with equation (1) contains additional accruals that are not included in the operating accruals measured with this alternative method, such as deferred taxes and restructuring charges. Therefore, in calculating the DA, the total accruals measured through formula (1) should be preferred.

CRSP and then reconciled through CRSP/Compustat Merged Database (CCM).[11] In addition, the risk free rates are taken from the FED website.[12]

We calculate the incentive ratio for each CEO as:

$$INCENTIVE\ RATIO_{i,t} = \frac{ONEPCT_{i,t}}{ONEPCT_{i,t} + Bonus_{i,t} + Salary_{i,t}}, \quad (3)$$

where:

$ONEPCT_{i,t}$=0.01*price* [shares held by CEO (excluding those related to options) + delta of newly granted options*(number of newly granted options)+ delta of previously granted unex options *(number of previously granted unex options)+ delta of previously granted ex options *(number of previously granted ex options)].

4.3 Descriptive statistics

In Table 1, we notice that both earnings management measures tend to have a mean close to zero. That is, on average, firms do not show a strong tendency to substantially manage their earnings.[13] Concerning the IR, it is interesting to notice that a 1% change in the price of the underlying share produces a variation of the CEO overall remuneration of about 26%. This number shows how substantial the interest of the CEO of US companies is "on average" to increase the share price. Given the substantial impact of the options and shares incentives on the CEO personal wealth, our belief that this measure is inherently good in capturing (or assessing) the incentive of the CEO to manipulate earnings is

[11] Whenever one CEO has more options granted in the same year, we aggregate the data at the ONEPCT level. We also took care of extreme unlikely values: we dropped 25 observations. with a stock price above 1000$ and we winsorised the dividend yield and volatility at the 0.025 level on both tails.

[12] http://www.federalreserve.gov/releases/h15/data.htm

[13] The number of observations for discretionary accruals a la Dechow, Sloan and Sweeney (1995) (called DA-TA) presents a somewhat higher number of firm/month observations compared to the earnings management measure a la Hribar and Collins (2002) (called DA-CF). This is due to the different availability of the variables required for the regressive approach needed to compute the two DA measures.

reinforced. These descriptive statistics are similar to those documented by Bergstresser and Philippon (2006).

INSERT TABLE 1 HERE

4.4 Empirical strategy: Portfolio analysis

We follow a standard portfolio approach to evaluate whether firms with CEOs perceived as honest receive higher market valuations / enjoy lower cost of capital. We form portfolios based on an implied management characteristic (management honesty) we posit to capture managerial commitment to truthfulness. The methodological approach is identical to the one employed, for example, in Barth, Konchichtki and Landsman (2011), who investigate the relation between transparency of a firm (as seen in proxies of earnings quality and disclosure quality) and cost of capital. Higher market valuations imply lower future excess returns (alpha), beyond what is predicted by asset pricing models, such as the Fama and French (1992) or Carhart (1997) models. Therefore, the central test we conduct is whether alpha is decreasing in managerial honesty.

To test the market value of honesty hypothesis, in the first step, we sort firms on the basis of last year's DA. In the second step, we examine whether those firms with simultaneously high IR and low DA will have lower excess returns than those firms with simultaneously low IR and high DA. Bergstresser and Philippon (2006) show that the lagged incentive ratio explains the absolute extent of current earnings management. Applying the same time convention, and in order to ensure that the data on which we form the portfolio is available before we change the portfolio composition, firms are sorted into the portfolios according to the previous year DA and the IR from two years earlier. For the portfolio

analysis the DA are considered in absolute values because we are interested in the variation (or divergence) more than the positive/negative direction of the managed earnings.

The portfolios are rolled annually (in June), following the established Fama and French (1993) methodology. (The fiscal year ends for some companies in May.)

Our main results are based on the classical four factor model, calculated on a monthly basis for each DA-IR portfolio. The four factor model is estimated for each portfolio *j* by:

$$R_{jt} = \alpha_j + \beta_{1j}\text{MKTRF}_t + \beta_{2j}\text{HML}_t + \beta_{3j}\text{SMB}_t + \beta_{4j}UMD_t + \varepsilon_{jt}$$

Where R_{jt} is the excess return in month t, $MKTRF_t$ is the market risk premium in month t, HML_t, SMB_t and UMD_t are the returns at time t of portfolios generated for capturing, respectively, book-to-market, size and momentum effects. Therefore, we regress the monthly value weighted returns of the portfolio on the four factors: MKTRF, HML, SMB and UMD. In detail, $MKTRF_t$ represents the difference between the month t value-weighted market return and the risk-free rate; the terms SMB_t and HML_t are the returns in month t to zero-investment factor-mimicking portfolios designed to capture size and book-to-market effects, respectively. UMD is the momentum factor: the difference between the average return of high prior return portfolios and low prior return portfolios in the time interval (2 -12); see Carhart (1997).[14]

Despite the intense debate about whether these factors are proxies for systematic risk and span all risk factors that affect common stock returns , we do not take position on these issues and simply consider the four-factor model as a model of performance attribution. Thus, alpha is here considered as the abnormal return in excess of the returns obtained with passive investments in these factors.

[14] We used the WRDS Fama-French dataset, which in turn collects data from French's website.

Furthermore, we took into account the delisting returns, being aware of the possible bias that could otherwise arise (on the point see Shumway (1997)).

5 Main Results

5.1 Baseline results: Sorting on earnings management

We first analyze the excess returns of portfolios sorted on earnings management only. For that purpose, we split firms into DA deciles.

INSERT TABLE 2 HERE

Table 2 demonstrates that alphas tend to increase over the range of DA, with a particularly pronounced increase in future excess returns in the highest DA decile. For example, under the DA-CF measure, the highest decile shows excess returns of roughly 1.5% per month. In other words, higher degrees of earnings management are associated with lower market valuations and higher cost of equity capital (beyond what is required by risk factors), consistent with the idea that earnings management has a real cost for companies.

5.2 Inferring preferences for truthfulness from actions in the presence of incentives

We next test a finer version of the market value of honesty hypothesis. In addition to the sort on DA, we now sort firms also based on their CEOs' incentive ratios, IR. We use terciles, which seems to offer a reasonable balance between creating a sufficiently fine-grained split and a manageable total number of portfolios, namely 10 x 3 = 30 portfolios. Recall from Section 2 that little earnings management despite high incentives – as observed in portfolio 3 – would seem to

indicate a commitment to truth (a high C_i value). Conversely, high earnings management despite low incentives (portfolio 28) suggests that the CEO has rather low (or perhaps even negative) lying costs.

Another way to think about the double sort we employ is that it is essentially equivalent to a sort on "excess earnings management," which would be obtained by first regressing earnings management on the incentive ratio, and then taking the residual amount of earnings management to select stocks.

The central result of our analysis is that the cost of capital for companies in portfolio 28 is always higher than what is required by the market for companies in portfolio 3. This is a robust finding across both DA measures and across the 4 methodologies (4 factor, 3 factor, CAPM methodologies, and also in terms of excess returns).

The main results are summarized in Figure 1. Consider a long short strategy on the two portfolios: going long portfolio 3 and short portfolio 28. As it is clear from Figure 1 (and from the last column (L3S28) of Table 3), the findings are striking. Companies in portfolio 28 consistently show higher cost of capital (monthly alpha of 2.33%) compared to those in portfolio 3 (0.56%) and this implies a significant negative alpha for the L3S28 portfolio (-1.97%).

INSERT FIGURE 1 HERE

These results, thus, resemble those in Hong and Kacperczyk (2009), but they add an important, manager-specific dimension: They had found that, from an investor point of view, significant excess returns are available from investing in sin stocks, that is, companies in a certain line of business. We find that significant

excess returns are available from investing in firms with dishonest / "sinning" CEOs.

The alphas of the 30 portfolios are shown in Table 3 and are plotted in Figure 2. This table and the figure illustrate the substantial difference between the portfolios' alphas.

INSERT TABLE 3 AND FIGURE 2 HERE

We note that the long-short alphas do not exactly equal the difference between the alpha in portfolio 3 and that in portfolio 28. The reason becomes clear when considering the loadings on the factors in the two portfolios. These loadings tend to differ across portfolios. The combination of portfolios 3 and 28 in one portfolio generates some diversification. Therefore, the spread portfolio shows a different dynamic than the two separate portfolios. In other words, these results indicate that both the four factors and our measure of managerial commitment to truthfulness reflect some information about cost of capital.

We caution that while these results indicate that managerial commitment to truthfulness is negatively associated with subsequent returns (and, thus, with cost of capital), these results do not necessarily imply that managerial commitment to truthfulness is a priced risk factor. A Two-Stage-Cross-Sectional regression approach could be implemented to address this question, but this approach may not yield unambiguous answers either. Prior research leads to inconclusive results as to whether or not the CAPM market beta, size, or momentum are priced risk factors (see Core et al., 2008; Fama and French, 2002; Petkova, 2006; Jegadeesh and Titman, 1993; Jagannathan and Wang, 1996).

A more general limitation of all such studies is that we of course do not know if we have the right asset pricing model. We use a natural experiment that at least partially addresses this point in the next subsection.

5.3 The value relevance of managerial honesty before and after Sarbanes-Oxley

The Sarbanes-Oxley Act (SOX) and the ensuing SEC rulings require, among other things, that top management individually certifies financial information. Sections 302 and 304 in SOX mandate the return of any incentive compensation owing to material noncompliance with any financial reporting requirements. Moreover, the stock exchange rulings enhanced the independence of outside auditors and also increased requirements for the independence of the audit committee. Given the impact of SOX on many aspects of corporate governance and its likely limiting effects on dishonest activities, it provides an excellent natural experiment to evaluate the relevance of the market value of honesty hypothesis. Specifically, the market value of honesty should have been higher before SOX than after SOX.

To investigate this idea, we split the sample in two intervals (before and after SOX, July 30, 2002).[15] The results are striking.

INSERT TABLE 4 HERE

For the period before the introduction of the law, we can notice in Panel A of Table 4 that the alphas of portfolio 28 are significant and they are higher in

[15] Cohen et al. (2008) find that accrual-based earnings management, measured by the DA-TA measure, increased in the years from 1993 to the passage of SOX and declined after the introduction of SOX. We do not find a significant difference in DA-CF levels before and after SOX. In any case, given that we sort firms into portfolios, what matters to our analysis are the relative, not the absolute discretionary accrual levels.

absolute terms compared to the full sample results. In addition,, the spread portfolio L3S28 as well shows higher estimated alpha values (-3% with the four factor model) compared to the full sample (-1.97%). We can, therefore, conclude that the results over the entire sample seem reinforced in a sample that only considers the period before SOX introduction.

By contrast, if we focus on the period following the introduction of the new legislation, the alphas turn non-significant and very small, as can be seen in Panel B of Table 4. In the spread portfolio as well, the estimated values are substantially lower compared to the full sample.

Figure 1 also summarizes the drastic differences between the alphas observed during the two time periods.

These results are consistent with the idea that the new limitations on implementable accounting manipulations accompanied by increased transparency limited both the need and the effectiveness of a market valuation on managerial honesty. Therefore, the market tended to homogenize the cost of capital required for firms managed by honest and dishonest CEOs.

Moreover, these results mitigate the concern that our main results were due to a misspecified asset pricing model. It is difficult to imagine a reason why the four-factor (or any alternative factor) model works better in the time period after SOX was introduced than in the time period before.[16]

6 Robustness

We also used an EM measure based on the balance sheet perspective. This measure is developed in Dechow, Sloan and Sweeney (1995), who follow the

[16] An alternative, more mundane interpretation is that the non-significant estimates could be related to the limited number of observations in the period occurring after SOX came into place.

methodology of Jones (1991)[17]. As before, the approach consists of two steps. In the first we calculate the total accruals:

$$TA_{i,t} = \left(\frac{\Delta CA_{i,t} - \Delta CL_{i,t} - \Delta Cash_{i,t} - \Delta STD_{i,t} - \Delta Dep_{i,t}}{A_{i,t-1}}\right) \quad (4)$$

Where:

$TA_{i,t}$= total accruals of firm i at time t, Δ= yearly change in the variables, $\Delta CA_{i,t}$=change in current assets (Compustat variable act), $\Delta CL_{i,t}$=change in current liabilities (Compustat lct), $\Delta Cash_{i,t}$=change in cash holdings (Compustat che), $\Delta STD_{i,t}$=change in long term debt included in current liabilities (Compustat dlc), $\Delta Dep_{i,t}$=depreciation and amortization expenses (Compustat dp), $A_{i,t-1}$=lagged value of total assets (Compustat at)

The second step then again is to predict normal accruals with a regression model:

$$TA_{i,t} = \beta_0 + \beta_1\left(\frac{1}{A_{i,t-1}}\right) + \beta_2\left(\frac{\Delta REV_{i,t}}{A_{i,t-1}}\right) + \beta_3\left(\frac{PPE_{i,t}}{A_{i,t-1}}\right) + \sum_{year} y + \sum_{industry} i + \varepsilon_{i,t} \quad (5)$$

Where:

$\Delta REV_{i,t}$=change in revenues for firm i at time t (Compustat variable sale), $PPE_{i,t}$=gross property, plant and equipment in year t for firm i

The discretionary accruals (DA-TA) are the estimated error of equation (5).

The results previously obtained with DA-CF hold also with DA-TA. The estimates for the long-short portfolio L3S28 are somewhat less statistically significant with the DA-TA measure, but economically still substantial.

[17] Jones (1991) has the merit of relaxing the assumption that non-discretionary accruals are constant over time

7 Conclusion

This paper assesses the impact of managerial honesty on stock market valuations. Our results are consistent with the fact that honesty has an impact on the level of cost of capital required by the market. The central argument of our analysis is that the market takes the CEO's personal monetary incentives into account when inferring preferences for truthfulness from her or his earnings management behavior. We find that firms whose CEOs engage in high earnings management even if they have small personal incentives tend to have much higher cost of capital than those firms whose CEOs do not exploit earnings management despite having high personal incentives to do so. Furthermore, our results show that the Sarbanes-Oxley reform greatly reduced the difference in cost of capital for firms managed by CEO with different levels of "presumed "honesty.

These results suggest that investors perceive CEOs' honesty to be value relevant. Future research could investigate if our results also hold when we take the entire top management incentives into account. Also, while we address differences between firms through controlling for differences in exposures to common risk factors, a more explicit analysis of differences between value and growth firms, or between firms with a large or a small fraction of intangible assets, may prove insightful. Finally, it would be interesting to repeat this analysis in other countries in order to identify whether cultural differences affect the "implicit" valuation of managerial honesty.

8 Tables and Figures

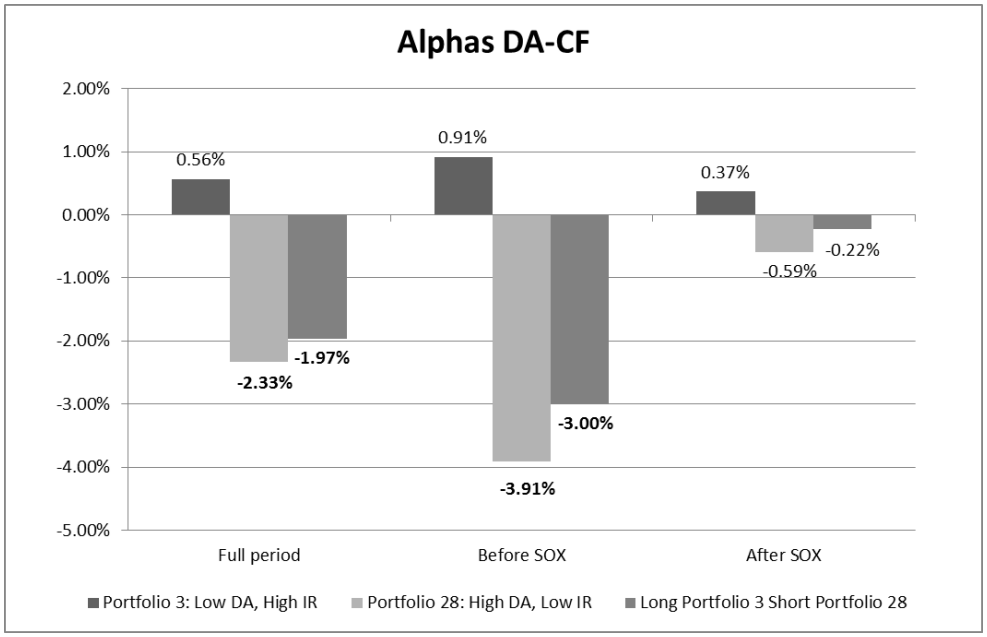

Figure 1. DA-CF alphas - The figure reproduces the monthly alpha of a long short strategy using DA-CF and IR to sort portfolios. The results are shown in the entire sample, in the sample restricted to the period before SOX entry into force and in the period after SOX entry into force.

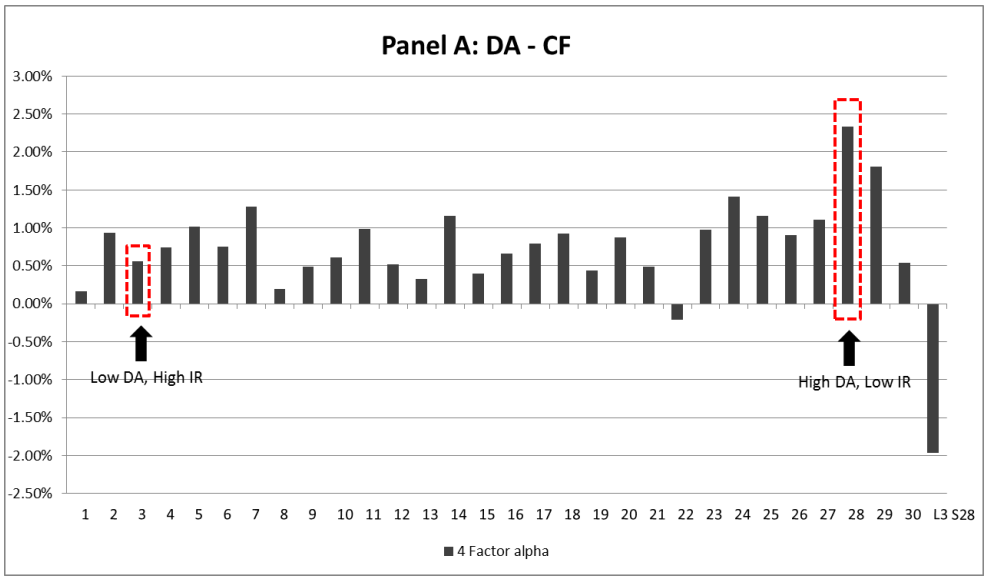

Figure 2. DA-CF alphas – four factor model – The figure shows the alphas generated by sorting the portfolios according to DA-CF and IR, as reported in the last line of table 3.

.

Table 1

Descriptive statistics

Table 1 shows the descriptive statistics for the two earnings management measures, the IR and the adjusted returns used in the portfolio analysis. DA-CF and DA-TA are the discretionary accrual measures generated following respectively the Hribar and Collins (2002) and Dechow, Sloan and Sweeney (1995)'s methods. The sample consists of all the firms in the CCM database for the fiscal year interval 1993-2006. The financial, insurance, real estate, transport companies and public utilities are dropped from the sample. The DA variables account for year and industry fixed effects. The underlying variables, needed to generate the two discretionary accrual measures, are winsorised at the 0.025 level on both tails and are adjusted for inflation using the CPI provided by the US Department of Labor on their website. The variable IR represents the incentive ratio calculated with the Core and Guay (2002)'s methodology. The variable aims at calculating the impact of a one percent change in the price of the underlying share on the overall remuneration of the CEO. The IR is calculated as the ratio ONEPCT/(ONEPCT+BONUS+SALARY), where ONEPCT is the dollar increment of value of the CEO's stock and options holdings if the company stock price increases one percent. The measure is based on variables calculated using the Compustat Executive Compensation dataset and CRSP for the fiscal years 1993-2006. The variable RETURN show the monthly returns on the left hand side of Carhart (1997) performance attribution methodology. The reported variable RETURN is calculated taking into account the delisting returns and represents the value weighted returns on the 30 different portfolios generated for the portfolio analyses, which follow in the next tables. The four factor of the Carhart (1997)'s method are taken from the WRDS Fama-French database, which in turn refers to the French's website while the row returns are taken from CRSP dataset.

	Obs	Mean	Std. Dev.	25th percentile	Median	75th percentile	Min	Max
DA-CF	128311	0.078	0.082	0.034	0.064	0.097	0.000	3.275
DA-TA	134102	0.055	0.104	0.016	0.036	0.068	0.000	8.053
INCENTIVE RATIO (IR)	86368	0.261	0.233	0.089	0.181	0.374	0.000	1.000
RETURN	4506	0.014	0.065	-0.209	0.012	0.048	-0.288	0.581

Table 2

Alphas from the portfolio analysis based only on DA-CF

The table shows the monthly alpha values deriving from a Fama-French-Carhart four factor model, from a 3 factor Fama-French model, from a CAPM model and the mean excess return. All firms are sorted and assigned to a specific portfolio according to the value of their DA-CFs: we generated 10 portfolios based on the previous year DAs' percentile cutoffs. For example, portfolio 1 contains the stocks whose previous year DA-CF was in the smallest percentile (0 to 10th percentile). The alphas in the last line of the table are the results of a regression of value weighted monthly returns on the four Fama-French-Carhart monthly factors (mktrf, hml, smb and umd). The alphas in the penultimate line of the table are the results of a regression of value weighted monthly returns on the three Fama-French monthly factors (mktrf, hml, smb). The alphas in the top two lines are, respectively, the result of a CAPM estimation and te mean excess return. The factors are taken from the WRDS Fama-French database, which is in turn taken from French's website. The portfolios are formed yearly and they are rolled in June (following the known Fama-French's methodology). The sample spans from June 1993 to December 2006. The reported alphas are in percent and are all significant at the 0.01 level. The estimates are bold to make them graphically consistent with the following tables. T values are reported in parenthesis.

Portfolio Analysis										
DA-CF	Smallest									Highest
Portfolios	1	2	3	4	5	6	7	8	9	10
Mean exret	**1.80**	**1.69**	**1.68**	**1.53**	**1.40**	**1.30**	**1.19**	**1.61**	**1.85**	**1.99**
	(4.60)	(4.62)	(4.23)	(4.39)	(3.24)	(4.02)	(3.81)	(3.73)	(3.73)	(3.12)
CAPM Alpha	**1.13**	**1.07**	**0.99**	**0.93**	**0.66**	**0.78**	**0.66**	**0.86**	**1.01**	**0.94**
	(5.68)	(5.57)	(5.22)	(5.53)	(3.11)	(4.07)	(4.07)	(4.19)	(4.00)	(2.67)
3 factor alpha	**1.01**	**0.94**	**0.83**	**0.77**	**0.77**	**0.71**	**0.69**	**1.00**	**1.17**	**1.50**
	(5.40)	(4.99)	(4.48)	(4.77)	(3.72)	(3.93)	(4.24)	(4.89)	(5.20)	(5.23)
4 factor alpha	**1.00**	**1.04**	**0.91**	**0.83**	**0.75**	**0.83**	**0.70**	**1.07**	**1.20**	**1.57**
	(5.18)	(5.51)	(4.85)	(5.06)	(3.49)	(4.53)	(4.19)	(5.13)	(5.15)	(5.32)

Table 3

Alphas from the portfolio analysis based on DA-CF and IR

The table shows the monthly alpha values deriving from a Fama-French-Carhart (1997)'s four factor model regression, from a 3 factor Fama-French model, from a CAPM model and the mean excess return. The portfolios are sorted considering the value of the firm DA-CFs and IR (incentive ratio): in other words we generated 30 portfolios based on the quantile cutoffs of the previous year's DAs mixed with the IR from two years earlier. We considered 10 deciles for DA, while for IR we generated three quantiles. For example, portfolio 1 contains the stocks that have in the previous year's DA in the smallest percentile and the two years earlier IR in the smallest tercile. The discretionary accruals are computed a la Hribar and Collins (2002), which are based on cash flows. The monthly alphas reported in the table are the results of a regression of value weighted monthly returns on the four Fama-French-Carhart factors (mktrf, hml, smb and umd), which is taken form the WRDS Fama-French database. The portfolios are formed yearly and they are rolled in June (following the known Fama French's methodology). In the last row we report the alpha from a Carhart-Fama-French four factor model, in the third the alphas from Fama-French three factor model, in the second the alphas from a CAPM model and, finally, the mean excess return is reported in the first line. The last column shows the alpha generated by the long portfolio 3 short portfolio 28 strategy: in other words the reported alphas can be generated by investing in the firms of portfolio 3 (honest) and going short in the firms of portfolio 28 (dishonest). The sample spans from June 1993 to December 2006 and consists of all the US companies available in the CCM (Crsp-Compustat merged database) for which it is possible to calculate IR and DAs. We adjusted returns in order to take the issue of delisting companies into account. Bold values are those significant at the 0.01 or 0.05 level. All reported values are in percent in order to generate a readable layout. The T-values are reported in parenthesis

	Portfolio Analysis																														
DA	Small	Small	Small	2	2	2	3	3	3	4	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9	9	9	High	High	High	
Incentives	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	
Portfolios	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	L 3 S 28
Mean exret	**1,06**	**1,67**	**1,47**	**1,35**	**1,67**	**1,59**	**2,04**	**1,12**	**1,16**	**1,21**	**1,59**	**1,20**	**1,14**	**1,71**	0,71	**1,49**	**1,05**	**1,27**	1,11	**1,38**	**0,87**	0,43	**1,43**	**1,92**	**1,59**	**1,51**	**1,84**	**3,00**	**2,29**	0,73	**-1,70**
	(2.34)	(3.52)	(2.62)	(3.04)	(3.76)	(3.22)	(4.18)	(2.33)	(2.56)	(2.55)	(4.20)	(2.57)	(2.27)	(3.17)	(1.18)	(3.18)	(2.51)	(3.60)	(1.79)	(3.76)	(2.29)	(0.73)	(3.14)	(3.90)	(2.34)	(3.10)	(2.88)	(3.92)	(3.18)	(0.97)	(-2.52)
CAPM Alpha	0,47	**1,14**	0,65	**0,85**	**1,14**	**1,04**	**1,37**	0,55	0,54	0,65	**1,10**	0,56	0,45	**0,99**	-0,01	**0,96**	0,54	**0,81**	0,40	**0,90**	0,38	-0,31	**0,85**	**1,26**	0,84	**0,94**	**0,98**	**2,14**	**1,56**	-0,26	**-1,57**
	(1.51)	(3.33)	(1.73)	(2.44)	(3.43)	(2.66)	(4.34)	(1.52)	(1.85)	(1.81)	(4.15)	(1.86)	(1.40)	(2.73)	(-0.03)	(2.62)	(1.75)	(3.33)	(0.83)	(3.55)	(1.44)	(-0.73)	(2.64)	(3.89)	(1.56)	(2.53)	(2.32)	(3.56)	(2.60)	(-0.49)	(-2.30)
3 factor alpha	0,03	**1,00**	0,55	0,57	**0,84**	0,72	**1,13**	0,12	0,35	0,38	**0,89**	0,37	0,38	**1,14**	0,34	0,68	0,52	**0,81**	0,32	**1,02**	0,36	-0,31	**0,84**	**1,28**	0,78	**0,94**	**1,13**	**2,63**	**1,65**	0,29	**-2,29**
	(0.10)	(2.93)	(1.43)	(1.63)	(2.59)	(1.87)	(3.59)	(0.35)	(1.19)	(1.06)	(3.40)	(1.24)	(1.17)	(3.08)	(0.76)	(1.89)	(1.70)	(3.37)	(0.66)	(3.93)	(1.33)	(-0.70)	(2.54)	(3.84)	(1.40)	(2.50)	(2.70)	(4.71)	(2.80)	(0.58)	(-3.43)
4 factor alpha	0,17	**0,94**	0,56	**0,75**	**1,02**	0,76	**1,28**	0,20	0,49	0,61	**0,98**	0,52	0,33	**1,16**	0,40	0,66	**0,79**	**0,92**	0,44	**0,88**	0,49	-0,21	**0,98**	**1,41**	**1,16**	**0,91**	**1,11**	**2,33**	**1,81**	0,54	**-1,97**
	(0.58)	(2.66)	(1.42)	(2.12)	(3.12)	(1.91)	(4.01)	(0.57)	(1.67)	(1.72)	(3.67)	(1.76)	(0.98)	(3.04)	(0.88)	(1.79)	(2.63)	(3.80)	(0.87)	(3.36)	(1.81)	(-0.47)	(2.91)	(4.16)	(2.09)	(2.35)	(2.57)	(4.13)	(2.99)	(1.08)	(-2.93)

Table 4

Alphas from the portfolio analysis based on DA-CF and IR before and after SOX

Table 4 follows the same methodology of table 3. The only difference consists in the interval considered: we cut the sample in two intervals. The first consist of the period before the enactment of the Sarbanes–Oxley Act, while the other relates to the sample period following the new legislation. In other words we test the impact of honesty on alphas before and after the introduction of the Sarbanes–Oxley Act. Bold values are those significant at the 0.01 or 0.05 level. All reported values are in percent in order to generate a readable layout. The T-values are reported in parenthesis**.**

	Portfolio Analysis																														
DA	Small	Small	Small	2	2	2	3	3	3	4	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9	9	9	High	High	High	
Incentives	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	
Portfolios	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	L 3 S 28
Panel A: Before SOX																															
Mean exret	1,09	**1,66**	**1,81**	1,11	**1,76**	**2,08**	**2,05**	1,19	**1,87**	1,22	**1,78**	1,09	0,89	**2,17**	1,14	**1,54**	**1,22**	**1,84**	1,36	**1,76**	**1,31**	-0,35	**1,79**	**2,37**	0,61	**1,79**	**2,62**	**4,45**	**3,16**	1,20	**-2,64**
	(1.58)	(2.12)	(2.13)	(1.63)	(2.52)	(2.74)	(2.77)	(1.57)	(2.79)	(1.70)	(3.16)	(1.59)	(1.04)	(2.26)	(1.12)	(2.35)	(2.07)	(3.91)	(1.28)	(3.18)	(2.41)	(-0.37)	(2.45)	(3.11)	(0.61)	(2.35)	(2.53)	(3.36)	(2.68)	(0.93)	(-2.32)
CAPM Alpha	0,47	1,04	0,98	0,56	**1,17**	**1,54**	**1,27**	0,57	**1,18**	0,59	**1,26**	0,42	-0,03	1,17	0,20	1,01	0,72	**1,40**	0,46	**1,17**	**0,78**	**-1,32**	**1,09**	**1,62**	-0,16	1,18	**1,61**	**3,34**	**2,33**	-0,03	**-2,36**
	(0.91)	(1.87)	(1.66)	(1.01)	(2.12)	(2.36)	(2.74)	(0.93)	(2.71)	(1.08)	(3.05)	(0.88)	(-0.05)	(1.91)	(0.26)	(1.90)	(1.56)	(4.09)	(0.55)	(3.42)	(2.07)	(-2.06)	(2.11)	(3.09)	(-0.20)	(1.90)	(2.24)	(3.18)	(2.29)	(-0.04)	(-2.07)
3 factor alpha	-0,08	0,84	0,88	0,20	0,75	0,98	**0,95**	0,09	**0,91**	0,23	**0,99**	0,13	-0,06	**1,32**	0,67	0,67	0,66	**1,36**	0,51	**1,31**	**0,85**	-1,11	**1,11**	**1,60**	-0,14	**1,30**	**1,85**	**4,23**	**2,60**	0,63	**-3,34**
	(-0.17)	(1.53)	(1.49)	(0.37)	(1.42)	(1.61)	(2.07)	(0.15)	(2.14)	(0.43)	(2.44)	(0.29)	(-0.11)	(2.10)	(0.93)	(1.33)	(1.44)	(4.21)	(0.59)	(3.73)	(2.30)	(-1.69)	(2.11)	(2.98)	(-0.17)	(2.07)	(2.61)	(4.46)	(2.62)	(0.71)	(-3.13)
4 factor alpha	0,09	0,94	0,91	0,58	1,04	0,78	**1,27**	0,15	**1,07**	0,54	**1,13**	0,44	-0,04	**1,58**	0,77	0,71	**1,06**	**1,37**	0,76	**1,06**	**0,95**	-0,73	**1,41**	**1,74**	0,54	1,12	**1,72**	**3,91**	**2,83**	0,96	**-3,00**
	(0.20)	(1.65)	(1.47)	(1.07)	(1.94)	(1.25)	(2.81)	(0.25)	(2.48)	(0.98)	(2.71)	(0.98)	(-0.06)	(2.45)	(1.04)	(1.36)	(2.41)	(4.09)	(0.87)	(3.09)	(2.49)	(-1.11)	(2.69)	(3.16)	(0.64)	(1.72)	(2.34)	(4.02)	(2.76)	(1.06)	(-2.73)
Panel B: After SOX																															
Mean exret	1,21	**1,17**	1,05	**1,57**	**1,28**	1,15	**1,76**	**1,36**	0,35	1,22	**1,30**	1,05	**1,57**	**0,97**	0,66	1,09	0,59	0,63	**1,40**	**0,96**	0,86	1,30	**1,24**	**1,46**	**2,12**	1,31	1,18	**1,41**	1,42	0,19	-0,37
	(1.87)	(2.14)	(1.35)	(2.50)	(2.06)	(1.59)	(2.54)	(2.17)	(0.52)	(1.82)	(2.54)	(1.52)	(2.82)	(2.16)	(1.20)	(1.65)	(0.84)	(1.07)	(2.33)	(2.08)	(1.65)	(1.91)	(2.39)	(2.04)	(2.16)	(1.93)	(1.45)	(2.00)	(1.82)	(0.22)	(-0.58)
CAPM Alpha	0,56	0,69	0,32	**1,03**	0,68	0,45	**1,10**	**0,78**	-0,28	0,63	**0,82**	0,33	**1,09**	0,59	0,15	0,48	-0,09	0,06	**0,88**	0,54	0,35	0,83	**0,75**	0,76	**1,22**	0,66	0,39	0,84	0,75	-0,58	-0,52
	(1.78)	(1.94)	(0.70)	(2.43)	(1.98)	(1.12)	(2.83)	(2.08)	(-0.71)	(1.43)	(2.70)	(1.14)	(2.89)	(1.88)	(0.46)	(1.19)	(-0.22)	(0.20)	(2.21)	(1.88)	(1.26)	(1.50)	(2.45)	(1.95)	(2.04)	(1.71)	(0.87)	(1.65)	(1.42)	(-1.15)	(-0.84)
3 factor alpha	0,23	0,24	0,38	0,78	0,30	0,72	0,60	0,37	-0,31	0,64	0,59	0,40	0,57	0,32	0,51	0,42	0,24	0,57	0,63	0,46	0,42	0,08	0,61	**1,17**	1,04	0,64	0,63	0,61	0,52	0,27	-0,22
	(0.70)	(0.68)	(0.79)	(1.91)	(0.86)	(1.64)	(1.60)	(1.02)	(-0.72)	(1.46)	(1.78)	(1.26)	(1.54)	(0.94)	(1.48)	(0.94)	(0.59)	(1.79)	(1.47)	(1.44)	(1.34)	(0.15)	(1.82)	(3.10)	(1.59)	(1.57)	(1.34)	(1.19)	(0.91)	(0.57)	(-0.33)
4 factor alpha	0,23	0,22	0,37	0,75	0,31	0,74	0,59	0,38	-0,29	0,65	0,59	0,39	0,55	0,30	0,50	0,40	0,24	0,58	0,64	0,46	0,43	0,07	0,60	**1,17**	1,04	0,66	0,64	0,59	0,54	0,29	-0,22
	(0.71)	(0.65)	(0.76)	(1.99)	(0.86)	(1.77)	(1.58)	(1.04)	(-0.70)	(1.46)	(1.76)	(1.24)	(1.53)	(0.92)	(1.46)	(0.92)	(0.58)	(1.87)	(1.47)	(1.43)	(1.42)	(0.14)	(1.82)	(3.07)	(1.57)	(1.62)	(1.37)	(1.17)	(0.94)	(0.67)	(-0.32)

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Part III: Curriculum Vitae